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The Solution of Food Distribution is Trucks on the Highway

Fifteen Thousand Mile Route Proposed by J. I. Blakslee. Idle Army Trucks Could be Utilized by Post Office if Maintenance Appropriations Were Available. Returning Soldiers Could be Given Employment

By E. S. FOLJAMBE*

PHILADELPHIA, Jan. 8.—Motor trucks on the highways for use as carriers in rural express and parcel post have for years been championed by Fourth Assistant Postmaster-General James I. Blakslee. The work which he has accomplished in motorizing the parcel post and in making it possible for communities which do not have railroad facilities to get their goods to market and receive goods from the city, is no less than remarkable. By means of the parcel post truck, cheap rates may be had and literally thousands of communities can be served which cannot be cared for by any private enterprise, owing to the condition of the roads, the sparseness of population, the distances which must be traveled, etc. The parcel post system, however, owing to the fact that it is making money on certain routes, could operate trucks on schedule to these isolated sections and still show a profit on the total system.

Six Thousand Routes Needed

In an interview with the writer Mr. Blakslee showed figures which proved that the parcel post system had routes which earned $16,000 a month with an expenditure of $4000 a month. "During the one month of October, 1908, we spent $34,000 and made a net profit of $6000 on twenty-six small routes, said General Blakslee. Recently I asked Congress for funds with which to establish 600 such routes, for it takes money to get these things started, and would have required $8,974,000. I only got $1,000,000. This would no more than operate sixty routes instead of 600 routes; in reality we need 6000 such routes, and the time will come when we will operate more than that in this country.

"There are in the U. S. approximately 26,000,000 food producers, counting men, women and children. They are today trying not only to feed themselves and 74,000,000 other American citizens but also a large part of Europe.

"At this writing, food, minerals and merchandise must be transported over approximately 240 miles of airways, 15,000 miles of canals and inland waterways, 350,000 miles of railways and 2,199,600 miles of highways.

"Airlanes are not as yet practical as an avenue for the distribution of food.

"Canals cannot be extended to provide any substantial relief.

"Railways, on account of fixed location of lines and terminals, cannot provide adequate, direct transportation facilities between all producers and consumers.

"The highway, efficiently used, offers the only additional means of communication and distribution."

*Directing Editor Chilton Publications.

Fifteen Thousand Mile Highway Proposed

Mr. Blakslee proposes a national or federal road covering some 15,000 miles of highway which will reach from Portland, Me., to Portland, Ore., swinging back down across the Southern border; in fact, covering the United States three times.

Will Pay for Itself in Five Years

He says it will cost about $450,000,000 to build such a highway at $30,000 per mile, but it would be here for our children's children. He proposes to raise the money from the net profits from transportation by trucks over the route and claims that he can pay for the whole thing in five years, not a cent to be raised by taxation or from any State money. Whenever the highway is used by the Federal Government for truck consignments, it is to set aside a part of the revenue for the purpose of paying for the road.

The proposed highway which is shown in the accompanying cut does not parallel any of the railroads. In fact, Mr. Blakslee's program for rural express and parcel post does not parallel railroads at any time. He believes that the highway, efficiently used, offers the only additional means of communication and distribution, and the co-ordination of some governmental function, such as the mail service with the motor vehicle on the highway, will result in maximum distribution, which will go a long way towards solving the great problem now before the American people.

He bases his estimate of the possible uses of such a road on an extended experience with parcel post and rural express. As a concrete example he points to the fact that eggs, which were selling for $.84 a dozen in Philadelphia, could be brought direct to the door of the consumer from Maryland for $.61 a dozen, butter for $.54 and turkey for $.38 a lb.

$500,000,000 Worth of Equipment Standing Idle

The Government now has trucks which are estimated to be worth in the neighborhood of $500,000,000. From 15,000 to 20,000 are now standing exposed to the

"The Co-ordination of Some Governmental Function, Such as the Mail Service, With the Motor Vehicle on the Highway, Will Result in Maximum Distribution.

"No individual, firm or corporation could afford to wait for return on investment for the necessary equipment for highway transportation until production increased in sparsely settled territory, or sufficient revenue appeared through the readjustment of then existing inefficient methods of communication. Whereas, in such localities, revenues from the conveyance of letter mail (a postal monopoly) will usually insure profitable returns from the inception of extended transportation facilities.

"Consequently, to improve the method of food distribution in 1919, to reduce the cost of living to the American people, use the highway; use the motor vehicle, and organize an efficient system of communication and conveyance between producer and consumer."

The Fifteen Thousand Mile Highway Proposed by Mr. Blakslee Would Pay for Itself in Five Years

weather; in fact in some cases are sinking into the mud. The rubber on these vehicles is being ruined by standing still in one spot, and the tire equipment alone must have cost over $4,000,000. All of these machines could be put at once into profitable service in parcel post and rural express work if the Post Office Department had sufficient appropriations to maintain them, and what is even more important, establish routes over which they would run; for in a large measure the trucks will be self-maintaining after the service is once established. 40,000 trucks could easily be used in this work to advantage, which would give employment to 60,000 men returning from the front. There are 50 or more cities in the vicinity of each of which 200 trucks could be used, and innumerable smaller cities in the vicinity of which a smaller number of cars could be used.

Improved road conditions will result in the development of motor truck trains somewhat similar to those now used in England, which is a solution of carrying a large bulk of freight or produce at small expense.

Mr. Blakslee claims the use of these trucks will undoubtedly not only reduce the cost of living but at the same time will utilize surplus army equipment which is now standing idle and will soon become a loss if not put to work. It would also provide the much needed employment of our boys returning from the front, many of whom are competent operators and mechanics. Putting the roads in shape will give immediate employment not only to those working on the roads but to a large number of industries which supply material and will eventually result in giving service to the farmer or producer, also to the consumer, and at a reduced cost.

It is the duty of each and everyone interested in improved highways transport to urge his congressman to favor legislation which will provide sufficient funds for this great work.

Standardized Trucks May be Made for Commercial Use

United States Army B Liberty motor trucks may now be produced for commercial purposes, the War Department announces. These trucks must be built strictly according to Government design, and will be officially inspected before being sold.

The reason for allowing the commercial sale is to assure the War Department of plants equipped to produce the standardized army vehicle. Any truck manufacturing concern may produce Liberty trucks or parts thereof upon submitting proof that it is properly equipped.

Highway Transportation is Dependent on the Roads—Boost!

War Department Has Plan for Disposing of Trucks Now in Europe

WASHINGTON, Dec. 20.—The following letter, received by C. C. Hanch, chief of the automotive products section of the War Industries Board, is an official confirmation of the views expressed from time to time by prominent members of the industry concerning the disposition which would be made of government trucks, now overseas.

"To Mr. C. C. Hanch, Chief,
Automotive Products Section,
War Industries Board,
Washington, D. C.

Answering your letter of the 14th inst. on the subject of disposition of motor trucks in possession of the War Department, you are informed that the War Department is attempting to work out plans for selling abroad all its surplus motor trucks and motor cars now overseas. It is not desired to return any of this material to this country if it can be avoided. It is further believed that there is a demand for this material abroad and that it can be disposed of to advantage there.

"Trusting that this is the information you desire,

Very truly yours,
Benedict Crowell,
The Assistant Secretary of War,
Director of Munitions."

M. T. A. Organizes Dealers' Division and Elects Officers

By C. P. SHATTUCK

NEW YORK, Dec. 18.—Declaring that the thousands of trucks built for the Government for service abroad and in this country would not be thrown upon the market as has been rumored, H. S. Quine, of the Goodyear Tire & Rubber Co., Akron, Ohio, sounded a note of optimism that was highly appreciated by the members of the Motor Truck Association of America, Inc., at its annual meeting at New York City.

Mr. Quine's remarks were based on a mass of data obtained by himself and his company and included sources of information held to be thoroughly reliable and authentic. He explained that making predictions in these days of reconstruction was hazardous, but after sifting the information dealing with the truck situation, he was able to state that the 30,000 trucks now in service abroad will remain there, that many more would probably be sent abroad as the services of our army would be required for a period of one or two years.

Other Sources of Demand

The rebuilding of the devastated sections of Belgium, France, etc., will, he said, require thousands of trucks and in addition there are possibly other fields for the government cars, namely, the Rural Express project of Postmaster Burleson, reclamation plans, etc. "I am very confident that the dealers' market is not going to be flooded with these trucks," said Mr. Quine. "A few will find their way on the market but they will be absorbed in such a manner that dealers need have no fear. Every indication points to 1919 being the greatest year for the exploitation of commercial cars and the future is exceedingly bright, both from the dealers' and the manufacturers' standpoint."

Urges Educational Propaganda

No less interesting were the remarks on the subject of legislation. Mr. Quine very forcibly urged dealers, owners and operators of commercial cars to institute at once a campaign to educate the general public to the fact that the motor truck was the only practical instrument for reducing the high cost of living, and will be the means of eliminating those problems having to do with transportation of food products under present methods.

He also dwelt at length on the tendency of legislators to make political capital of the truck and said that the remedy was intensive propaganda to educate the public to the merits of the commercial car. Every dealer, manufacturer and user of trucks should become actively engaged in preaching the gospel of the commercial car, for only through education of the public would it be possible to nullify adverse legislation.

Form Dealers' Division

An interesting development of the meeting was the formation of the Truck Dealers' Division, composed of dealer members of the Motor Truck Association of America, Inc. The movement was so well launched and met with such a response that approximately forty dealers were enrolled and indications are that the majority of dealers in New York will join. The present membership includes many of the larger, more influential and live wire dealers. Such an organization will, it is believed, permit of more readily solving any dealer problem that may arise, and make possible the bringing to bear of organized influence when legislation detrimental to trucking interests is suggested. It is practically an organization within an organization and the promoters of the plan are very enthusiastic over its possibilities. W. H. Moore, of the Garford Motor Truck Co., Inc., is chairman, and A. M. Welch, of the Reo Motor Car Co., vice-chairman. T. D. Pratt, executive secretary of the Motor Truck Association of America, Inc., is secretary-treasurer.

Outlines Truck Show Plans

Charles A. Stewart, secretary of the Automobile Dealers' Association of New York, and manager of the commercial car exposition to be held by this organization the week of February 8-15, spoke briefly as to the event. He said that it was very probable that use would be made of the 69th Regiment Armory in addition to Madison Square Garden, as the application for space had, up to the present time, exceeded all expectations. Invitations are to be sent users of commercial cars and every effort made to interest the public in the possibilities of the motor truck.

Officers and Directors Elected

The election of officers and directors for the ensuing year resulted as follows: President, Charles M. Geiger; vice-presidents, John M. Wierk, L. E. Campbell and Albert C. Bergmann; secretary, Joseph Husson; treasurer, William P. Held; directors for two years, A. C. Russell and H. V. Middleworth; for one year, W. H. Moore; for three years, Joseph K. Orr, Emanuel Lascaris, David C. Fenner and John C. Williams. The nominating committee is David C. Fenner, chairman; L. E. Campbell, G. D. Smith and W. J. Ryan. T. D. Pratt continues as executive secretary.

Eastern Truck Specifications in This Issue—Western Half Next Issue

Coming Events

January 16, 23 and 30—**Jacksonville, Fla.** Auto Dealers, Inc., Meeting.

January 17-18—**Cincinnati, Ohio.** National Assn. Motor Truck Sales Managers. Meeting at Gibson Hotel.

January 20-27—**Hartford, Conn.** Tractor Show.

January 22, 23 and 24—**Fargo, N. D.** North Dakota Implement Dealers' Tractor Show. Hanson Tractor School Bldg.

January 23—**San Francisco, Cal.** Garage Owners' Protective Assn. Meeting.

January 27-February 1—**Toledo, Ohio.** Truck, Tractor, Passenger Car and Accessories Show. Terminal Auditorium.

January 28-29—**Chicago, Ill.** Meeting of N. A. D. A. La Salle Hotel.

January 29—**Chicago, Ill.** Motor and Accessories Manufacturers' Assn. Meeting.

February 3-6—**Chicago, Ill.** Show. Automobile Trade Assn. Trucks.

February 4-6—**New York City.** Society of Automotive Engineers. Annual Meeting. United Engineering Bldg., 29 W. 39th St.

February 10-15—**New York City.** Automobile Dealers' Assn. Truck Show. Madison Square Garden and 69th Regiment Armory.

February 10-15—**Kansas City, Mo.** Kansas City Tractor Club. Tractor Show.

February 3-8—**Oklahoma City, Okla.** Farm Power Equipment Club Tractor Show.

February 15-22—**Minneapolis, Minn.** Automobile and Tractor Show.

February 15-22—**Newark, N. J.** Passenger Car and Truck Show.

February 18-22—**Wichita, Kans.** Wichita Tractor & Thresher Club Show.

February 24—**Springfield, Mass.** Motor Truck Show. Municipal Auditorium.

February 24-27—**South Bethlehem, Pa.** Motor Truck Show.

February 24-March 1—**Kansas City, Mo.** Motor Car Dealers' Automobile and Tractor Show. Auspices Kansas City Tractor Club.

February 25-28—**New York City.** American Road Builders' Assn. 16th Annual Convention. Hotel McAlpin.

March 1-8—**Detroit, Mich.** Eighteenth Annual Auto Show. Crosstown Bldg. Passenger Cars, Trucks, Tractors and Accessories. H. H. Shuart, Mgr. Hotel Statler, Detroit Automobile Dealers' Assn.

March 1-10—**San Francisco, Cal.** Passenger Car and Truck Show.

March 10-15—**Omaha, Neb.** Fourteenth Annual Automobile Show. Under auspices Omaha Automobile Trade Assn. Clarke G. Powell, Mgr. Trucks and Tractors will be shown.

March 12-15—**St. Joseph, Mo.** Motor Truck Show. Auditorium.

April 5-12—**Montreal, Canada.** Show. Passenger and Commercial Cars, Accessories, Tractors and Farm Lighting Outfits.

April 8-12—**Brooklyn, N. Y.** Motor Vehicle Dealers' Assn. Truck Show. I. C. Kirkham, Mgr.

Fulton Truck Salesmen Get Together

NEW YORK CITY, Jan. 8.—Salesmen of the Fulton Motor Truck Co., of Farmingdale, L. I., met in this city tonight at a dinner held at the Waldorf-Astoria. W. F. Melhuish, president of the company, presided as toastmaster. The speakers included C. A. Musselman, Carl Page and E. G. Saunders. Highway transportation was one of the principal subjects of discussion.

Automotive Products Export Company Formed

The trade will welcome the news that a large organization in New York has undertaken to open the markets of the world to the automotive industry upon a plan that is both scientifically and commercially correct. The new enterprise, the Automotive Products Corporation, is in the hands of men experienced both in the export and the automobile fields. The company will be known as the Automotive Products Corp., with offices on the thirtieth floor of the Woolworth Bldg., New York City. The president, H. W. McAteer, and the vice-president. C. B. McElhany, of the new company, hold similar offices in the American Steel Export Company, which has become a big factor in the steel industry as a result of the enormous quantities of steel this company has exported during the past three years. The office of secretary-treasurer is to be held by C. A. Musselman, who is well-known to the automobile industry, having been closely identified with it for twenty years as treasurer and general manager of the Chilton Co., Philadelphia, Pa. E. P. Chalfant, general manager of the new company, has had experience in the manufacturing as well as in the export field.

The Automotive Products Corp. realizes that much of the success of the automobile business is due to the excellent service given consumers, and will undertake to give the same service throughout the world, for it is appreciated that only by safeguarding the interests of the consumer and dealer can the American manufacturer expect to dominate foreign markets.

To export automotive products is the object of this new enterprise, and by becoming specialists and selecting only the best from the American market, the customers of the A. P. C. will always be assured of having cars, trucks, tractors, parts and accessories made by reliable companies whose products measure up to the high standard which has been set by the company's engineering board. The A. P. C. announces that it will not handle every line that is offered for export, inasmuch as manufacturers must first demonstrate that they have capital ample to properly finance their business and then must prove the merit of their product. This policy will be pursued to avoid sending to foreign countries any automobiles, tractors, accessories, etc., for which parts cannot be had, due to failures of manufacturers, nor will there be shipped abroad goods which are not up to date or do not compare favorably with the best competing lines offered in this country.

The object of the A. P. C. is not only to sell the foreign merchant but also to serve him, and thus establish a confidence which will result in a worldwide demand for automotive products of American make, endorsed by the A. P. C. By thus safeguarding the patrons of all countries throughout the world, the A. P. C. anticipates that within a few years, in one line of trade at least, it will be possible to see that "Made in America" stamp everywhere.

Manufacturers of automotive products desiring the exploitation of their goods throughout the world can obtain further information by writing to the Automotive Products Corporation, Woolworth Bldg., New York City.

Steel Companies Join in Export Corporation

NEW YORK CITY, Jan. 2.—The North American Steel Products Corporation has been organized for the purpose of building up foreign markets for American steel. An office will be established in New York City, and branches will be located in any part of the world where the introduction of American products is desirable. The United States Steel Corporation has had no part in the forming of the export company, its export business being provided for by the United States Steel Products Co.

The companies included in the export combination are: Lackawanna Steel Co., Bethlehem Steel Co., Brier Hill Steel Co., Lukens Steel Co., Midvale Steel & Ordnance Co., Republic Iron & Steel Co., Sharon Steel Hoop Co., Trumbull Steel Co., Whittaker-Glessner Co. and Youngstown Sheet & Tube Co.

E. A. S. Clarke, president of the Lackawanna Steel Co., has accepted the presidency of the new corporation. He has resigned the presidency of the Lackawanna company and will devote his entire time to the interests of the new company.

Creating Export and Import Zones

WASHINGTON, Dec. 26.—A commission on port and harbor facilities appointed by the U. S. Shipping Board has been at work for several months on a plan of organizing the whole country into zones to facilitate the handling of exports and imports. The purpose is to determine the origin of exports and the destination of imports and route them through the nearest and most convenient ports. The commission regards adoption of this plan highly important to success of American commerce when the shipbuilding program is completed and about 18,000,000 dead-weight tons of shipping will be under the American flag. Local port and harbor commissions are being urged to enlarge and equip dockage facilities. Division of the country into zones is expected to divert much traffic from North Atlantic ports without reducing that shipping below the amount such ports are able to handle.

New Ruling on Manufacturers' Export Taxes

WASHINGTON, Jan. 6.—In the decision regarding the taxation of sales of articles exported, the Commissioner of Internal Revenue sets forth that articles may normally be exported by the manufacturer in the following ways:

1. They may be shipped by the manufacturer to an agent in a foreign country and after reaching there may be sold by the agent.

2. They may be shipped by the manufacturer to a foreign purchaser to fill orders received by an agent in a foreign country.

3. They may be shipped by the manufacturer to a foreign purchaser to fill orders received by the manufacturer in the United States.

4. They may be shipped by the manufacturer to a foreign purchaser to fill orders solicited by mail and received by mail from the foreign purchaser.

In none of these cases is the so-called manufacturer's tax to be collected.

The Commissioner further explains that a sale to a concern doing business in the United States is a sale for domestic delivery unless the terms of the original order or contract of sale show that the seller is to export the article or that he is to make such delivery of it as will result in its exportation; in the latter event the tax is not to be collected. In cases where an article sold by a manufacturer is subsequently exported, but not by the manufacturer, it is held that the manufacturer is liable for the tax; for a seller claiming exemption on the ground that the article is exported must show that he is the exporter. Examples of sales by a manufacturer which are taxable, notwithstanding ultimate exportation of the article sold, are:

1. A sale to a dealer in the United States, effected by compliance with his shipping instructions to export, given subsequent to the contract of sale which did not require export shipment.

2. A sale to an export commission house in the United States, which is effected by a shipment consigned to the commission house at a domestic port which is followed by immediate exportation by the commission house to a foreign buyer in whose behalf it made the purchase.

3. A sale to a corporation in the United States which immediately exports to a foreign concern of which it is a subsidiary.

4. A sale to a member of a foreign partnership who conducts a buying business in the United States for his firm and exports the articles bought.

In these cases the application of the taxes is not affected by a provision in the contract of sale requiring the buyer to use or dispose of the article sold only in some foreign country (T. D. 2781).

The new revenue bill, if enacted in its present form, gives authority to the Secretary of the Treasury to make provision for the exemption from tax of all cars that are ultimately exported.

N. A. A. A. J. Now Automotive Equipment Association

Manufacturers and Jobbers Now on Same Membership Basis. Reconstruction Problems Discussed

P. H. LYON
President

CHICAGO, ILL., Dec. 18.—Manufacturers and jobbers from all parts of the United States met at the annual convention of the N. A. A. A. J. at Congress Hotel. The convention decided to change the name to the Automotive Equipment Association and will be known in the future as the A. E. A. The summer meeting will be held at Hot Springs, Va.

As usual the meetings were conducted by Commissioner Webster. In his address he spoke of what the jobbers were doing in reconstruction work. He gave the latest information on the Government's removal of price restrictions, warned the members concerning labor troubles, and paid a glowing tribute to the assistance his organization had received from the National Automobile Chamber of Commerce and the National Automobile Dealers' Association. He appealed to the members to be more liberal with their ideas and in their support of the association's Bulletin.

Retiring President Beech, in a brief address, called attention to present conditions, contrasting them with past, and urged continued economy learned during the war. He said, "I think the production during 1919 will easily equal the production of 11 months of 1917 and I feel certain that greater business lies ahead of us."

Joint sessions of manufacturers and jobbers were held on Wednesday afternoon. Each, however, held separate sessions.

One Form of Membership Decided Upon

In joint session, under the chairmanship of President Beech, one form of membership for jobbers and manufacturers was decided upon.

Another amendment, which would require the new jobber members to do exclusively a wholesale business, while present membership would do either wholesale or retail, created much discussion. The jobbers apparently favored it and so voted in their separate meeting. At its meeting the manufacturing section voted against it. In the following joint session the amendment was therefore postponed for final decision until the Hot Springs convention.

President—P. H. Lyon, California.
Vice-President—Richard R. Englehart, Iowa.

Directors.

R. A. Stranahan, Ohio, Chairman.
Fred Campbell, St. Louis, Mo.
H. M. Dine, Cincinnati, Ohio.
N. H. Oliver, Chicago, Ill.
E. A. Pegau, Omaha, Nebr.
J. M. Millen, Montreal, Canada.
Louis Schwab, New York City.
J. M. Bloch, Indianapolis, Ind.
George Brunner, Utica, N. Y.

New Committees.

Resolutions.

Ernest J. Millen, Canada.
George Shearer, Pennsylvania.
C. L. Pederson, Wisconsin.
C. L. Wheeler, Utah.
Robert Weinstock, California.
E. A. Cassidy, New York.
R. A. Stranahan, Ohio.
C. O. McCauley, Texas.

Press.

S. F. Beech, Illinois.
Charles Hillis, California.
W. J. Dean, Minnesota.

Credentials.

H. M. Dine, Ohio.
C. D. Pettingill, Florida.
Thos. F. Wilson, Rhode Island.

NEW A. E. A. MEMBERS.

Jobbers' Section.

Archenbold Automobile Supply Co., Waco, Tex.
James Bailey Co., Portland, Ore.
Electric & Auto Supply Co., Birmingham, Ala.
Ludger, Gravel and Fils, Montreal, Canada.
Motor Mercantile Co., Salt Lake City, Utah.
Thomas J. Northway, Rochester, N. Y.
Washington Auto & Supply Co., Washington, Ill.
Wholesale Auto Supply Co., Tampa, Fla.

Manufacturing Section.

Auto Leather Mfg. Co., New York City.
William H. Banfield & Son, Toronto, Canada.
Hill Pump Valve Co., Chicago, Ill.
Pennsylvania Piston Ring Co., Cleveland, Ohio
Western Mfg. Co., Oklahoma, Iowa.
John A. Brown Mfg. Co., Columbus, Ohio.
Copeland Laboratories, Michigan.

Prices Not Likely to Drop Soon

There were several speakers from the floor who discussed the subject of the trend of prices in view of the reconstruction period. The prevailing opinion seemed to be that prices would not drop rapidly and that any drop which might occur would be gradual.

Interchanging Stocks

J. M. Millen, speaking for the Canadian division, stated that they assist each other by sending out a notice to all of the jobbers of any material on which certain jobbers are overstocked and it was found that other members were understocked on same and were very glad to know where they could get such articles.

RICHARD R. ENGLEHART
Vice President

Mr. Dine, of Ohio, stated that the Ohio Association made it a point to send out bulletins to the Ohio members of the overstocks any had on hand.

It was decided to give notice to Commissioner Webster of any overstocks on the hands of any of the members for the information of the others.

Objection to Enforced Quantity Buying

There was a general feeling among the jobbers that at this time, especially, the manufacturers should not insist on jobbers buying large quantities of material in order to get suitable prices.

Methods of keeping track of stocks, how often they should be turned over, etc., were discussed by Fisher, of Philadelphia; Bass, of Peoria; Stearns, of New Orleans, and others. A number of these men promised to write articles for the "Leader," the association's monthly bulletin.

The manufacturers were requested to notify all jobbers as soon as possible if they are bringing out anything new which ought to be illustrated in the jobbers' catalog, as this is the season for preparing new catalogs and the jobbers, naturally, want to list everything worth while that is coming out.

The question of guaranteeing prices to jobbers for certain periods was discussed at length by the manufacturers' division, but no definite action was taken, though most of the manufacturers present were undoubtedly against the practice.

Constitution Amended

Two important changes were made in the by-laws of the association in the first hour of the second day's session. Both were passed without a dissenting vote.

The first provides for a change from 16 to 19 directors, to go into effect at once. Those who direct the affairs of the association have long felt that a larger directorate was necessary with the constantly increasing size of the organization, and during the coming year and thereafter nineteen representatives from all sections of the country will act on the directorate.

The second important amendment provides that regularly accredited delegates

must hereafter not only answer each roll call, but must also remain through meetings if they expect to get their railroad and Pullman fares paid by the association.

Suggests Handling Tractor Equipment

In his annual suggestions to the association, Commissioner Webster called the members' attention to the fact that, due to lack of initiative and failure to appreciate conditions, much of the retail equipment business had gone to department stores, cut-price houses, etc. He mentioned this as a warning to the members in connection with the growing equipment business for farm tractors, and suggested that the association take immediate steps to investigate this line of accessories and equipment that its members might have their share of the sale and distribution of tractor accessories as this business grows. One of the dangers that was pointed out by the commissioner was that farm implement dealers, and others of that type, who might begin to stock tractor accessories, would soon decide to enlarge their business to include passenger car and truck accessories, with the result that there would be a division of this business not at all to be desired.

Report of Credit Department

Claims reported 1198
Amount of claims $108,783.22
Claims collected $42,067.97
Number of claims collected 379
Percentage of claims collected...39

The financial statement of the association showed the following:

On hand Sept. 30, 1918 ....$16,795
Receipts Oct. and Nov..... 12,542
On hand Dec. 1 29,337
Disbursements Oct. and Nov. 17,020
Balance on hand Dec. 1..... 12,510

Money Raised in Executive Session

The unfortunate complications which the members were under in connection with the Sherman Anti-Trust Law necessitated the raising of funds for the purpose of exonerating the twenty-one members who had been indicted. For this purpose Commissioner Webster stated that at least $100,000 would be required and that James H. Wilkinson, of Chicago, had been retained as chief counsel for the association.

The necessity for largely increased funds seemed to be realized by all and the fund was started by voluntary subscriptions from various members who signed cards which had been distributed, nearly $39,000 being raised. This, it is believed, will be increased to the $100,000 mark.

John Grau Stirs Convention

Attorney Grau spoke to the members, raising them to a high pitch of enthusiasm by his oratory. His plea was, that each and every member support those who are standing the brunt of trial; that the future of business is at stake and the Sherman Law radically wrong; that the United States Government itself violated the Sherman Law twenty-four hours each day in order to win the war; that there was never a time when a trade organization was so essential as at present. He censured all business men who vote for Congressmen and do not know how they stand on business law and insisted that the representatives of the business world in Congress and elsewhere must discontinue manipulating business law for political reasons.

Address by James H. Wilkinson

Mr. Wilkinson for obvious reasons did not care to discuss the pros and cons of the suit, but said that, if there ever was a suit in the courts of the United States that should be decided in favor of those firms being sued it was this present case. He also said that this is not the suit of the twenty-one of your members who, because of their position in your association, have been selected, nor is it a suit of the association as a whole, but it is **the law suit of the business world of America.**

Responsibility of Consignee

The subject which occupied some attention and brought out discussion was that of the relative responsibility of those shipping and receiving goods. The law on the subject is clear that the consignor's responsibility ceases as soon as he has turned the goods over to the common carrier and received receipt for same. However, the discussion brought out that consignees had been asked to pay for goods in several instances which they had not received and it was found that the manufacturer had not included the bill of lading or that he had actually been unable to have the goods received by the common carrier, that papers had been furnished by the consignor as high as three times to the common carrier before the goods were actually received by the carrier and receipted for. It was the feeling of the meeting that, of course, the shipper should always include the proper papers, but that it was the work of the consignee to take up all matters of non-receipt of goods, delay, etc., with the common carriers. No resolutions, however, were passed on the subject.

Good Roads Discussed

Stearns, of Louisiana, spoke on the importance of good roads to everybody connected with the automobile business and suggested that a committee be appointed to formulate plans for the activities of the association in this matter.

Reports of State Chairmen

A few of the state chairmen reported on the activities of their sections, but the reports as a whole were very incomplete and it was suggested that the chairmen report through the columns of the "Leader."

McCullum, of the Denver Auto Equipment Co., pointed out the features of the work of the Rocky Mountain Association and said that they were making decided progress.

G. N. Baughman, of Tampa, Fla., reported no state organization as yet, but that there were very live sections in some of the larger cities.

Theo. Bass, of Peoria, said that there would be a state convention in Peoria in February and that the association was very active.

J. M. Bloch, of Indianapolis, reported that the jobbers had been co-operating with the N. A. D. A. in the state, but had no separate organization.

In Iowa there is no state organization as yet.

F. W. George, of Wichita, Kans., made a very good progress report for his section.

J. E. Shuford told of the activities of the Missouri section and stated that they will hold a meeting in March in St. Louis.

William J. Davis spoke on the activities of the New York section and said that they would hold their meeting in New York City in January.

J. D. Grant, of Fargo, N. D., gave a progress report for the state.

C. E. Justus, of Columbus, O., elaborated on the splendid work of the Ohio Association and recommended to other associations, that, if they wanted to succeed, they should pay for a good man to act as manager. He spoke briefly of the Akron meeting, which was very successful, and said that the Ohio organization was planning to have manufacturers exhibit at its next meeting, the date of which is not yet set.

George L. Brown, of Johnstown, Pa., gave a progress report for the state.

Texas also reported progress.

B. R. Benton, of Richmond, Va., reported an active city and also state organization.

E. C. Guthard, of Billings, Mont., very frankly stated that he and others had been working for some eight months on an organization, but that the interest seemed to die out when the organizers left town and that so far they could not say that they had succeeded, but that they were still working on it.

J. M. Millen, of Montreal, very briefly spoke of the wonderful organization and work of the Canadian section.

A glowing tribute was paid to the retiring president, Mr. S. F. Beech, when amidst great enthusiasm and applause a silver loving pitcher was lowered on to the speaker's table in front of him from the balcony above.

Manufacturers and Dealers Meet in Cleveland

CLEVELAND, Dec. 21.—Cleveland truck manufacturers and dealers got together last week for the first of their monthly dinners, held at the Cleveland Automobile Club. Optimism was the reigning note in all the addresses. Geo. M. Graham, general sales manager of the Pierce-Arrow Co., came from Buffalo, and, in an address, reported the results of the extensive study of the truck outlook which he has been making since the signing of the armistice. Among other addresses were those of H. S. Norton, of the Packard-Cleveland Co.; T. R. Ball, attorney for the White Co., and J. Schmunk, sales manager of Peerless Co.

Selling the Tractor in a Big Way. Let's do It in 1919

Tractor Figures Look Big on Paper, But in Traveling Through the Country One Seldom Sees One at Work in the Fields. Ohio Put Across the Greatest Tractor Drive in History Last Year. A Splendid Example for Other States in 1919

By A. V. COMINGS

THERE isn't today a state in the Union through which one may travel east and west, north and south, during the plowing, planting and harvesting seasons, and see more than just an occasional tractor. One may sit for hours with nose flattened against the Pullman window pane, rolling toward the setting sun through the dusty Dakotas, winding among the blue-hazed foothills of Washington and California, skimming the sandy southern states, or rattling over the fertile farm lands of Michigan, Ohio, Illinois—and seeing a tractor is an event, an adventure. It is something to be recorded in memory, to be recounted to the folks at home, when one returns to the old homestead.

Plenty of horse-drawn agricultural implements are seen. Why, the dust these raise on a windy April day on the wide Dakota plains, obscures the landscape till the inexperienced traveler thinks a fog has settled down over the earth. But tractors—well, once in many, many miles of railway travel.

Any one in the tractor business—manufacturer, dealer, government statistician—knows just how many tractors there are in North Dakota, in Ohio, in Georgia, Kansas, and the rest of the states. There seems to be a lot of them, just to look at the figures, and yet the fact remains that when you get out into the farming country, out where each tractor counts just **one**, and no more, it would take the most optimistic tractor man to count a score in an all-day trip from Coney Island to the Barbary Coast. I doubt if he would really see that many, even in the busiest farming season.

Now, what's the answer?

Plenty of good tractors are made, and they are being sold, to **individuals**, to put the matter in its proper sense.

But I believe the big thing right now is to sell the tractor as an **institution**, to communities, to whole neighborhoods, to whole states; to the whole United States. Sell tractor performance, sell tractor results, rather than the individual tractor that this, that or the other manufacturer may happen to make.

One big experiment was made along this line in 1918—selling the tractor intensively as an institution—selling it as the one piece of machinery that could boost crops up to the point of giving the greatest aid to Herbert Hoover in his tremendous task of feeding the world from America's granaries.

And, let me tell you in plain, uncensored English, this experiment succeeded, away beyond the dreams of those energetic, red-blooded, forehanded men who put it across—those men out in Ohio, the governor, the food administrator, the banking superintendent, and others, who **knew** tractors ought to be used to produce those extra bushels of corn and wheat and oats, and other grains that constituted Ohio's extra bit toward feeding our boys "over there" and the hungry European nations.

What they did, every single state in the Union ought to do in 1919. They sold the tractor idea to the state. They sold the tractor idea expressed in terms of extra bushels per acre, extra acres per farming unit—in terms of life-giving food for our boys and the starving nations of Europe. And incidentally—but thank God not primarily—in terms of extra dollars in the bank account of every farmer who was modern enough to buy a good tractor!

And the result of selling the idea—not the individual tractor, mind you, but **the tractor idea**—to the State of Ohio, was to put just 1938 more tractors into Ohio's food-producing machinery during the year just closed! Think of that. With 2341 tractors on the job last January, this common sense campaign to sell the tractor as a modern institution, added nearly 2000 tractors to Ohio's tractor fleet.

How Ohio Put the Tractor Idea Across

Because other states ought to do the same thing during the coming winter and spring (for the world is going to need food, more food, and still more food, from our wonderful United States during the next few years), I am going to outline the method used in Ohio to put the tractor idea across, and I heartily commend it to the patriotic governors and leaders in every big farming state in the Union during the coming year.

First, let the manufacturers know what you are planning, and get them to tell you definitely just how many tractors they can send into your state when the farmers begin to awaken to the big idea and commence to buy. Let them know there is going to be a demand, a real call, for their machines.

Then put the plan right up to the governor, the food administrator, the chairman of the council of national defense. Sure, the war is over, but just the same there are the hungry mouths to feed, for several years yet. And the same old organization that did such splendid work during the war is still ready to pitch in and help feed Europe.

Tractor Schools as an Aid to Business

Promote tractor schools this winter when the snow is on the ground. A state school in the state capital is a big central idea to build around, and the various tractor companies will be only too glad to send tractors and experts to teach tractor usage. Follow this up with tractor courses in various main centers, where those who are interested may attend without too much expense.

And then, just as soon as the snow is off the ground, begin your demonstrations all over your state. Your county agricultural agents will take care of these, in co-operation with men from your state agricultural college. They will know just how to go about it. Never mind the competitive records; just get a bunch of tractors on the job doing the various work that tractors ought to do on your farms, and you will find that you will have hundreds of farmers at every single demonstration.

Why, I attended a tractor demonstration in Northern Ohio last spring that had been postponed twice, and was finally held on a raw, cold day, with rain in the air, and in spite of all these disadvantages, there were nearly four hundred people there. And one man that I met (there were probably others) had come clear down from Michigan just to see what tractors could do, because he was a farmer and wanted to be shown. His own state had overlooked him, and others like him, who wanted to know.

The farmers who go to these demonstrations are not, as a rule, sold on any one make of tractor. They are yet to be sold on the tractor idea. They want to see a whole fleet of tractors, all working together. They want to see with their own eyes, the tractor doing the things it must do on their farms, to put the extra money into their bank accounts.

I know a state, a big, rich agricultural state, where its progressive men tried to get the governmental machinery behind a tractor drive this year. And they couldn't, because the "powers that were" immediately countered their plan by saying it was merely the scheme of a bunch

of business men to make money selling tractors and farm implements.

Can you beat that?

Why not say that putting forth every effort to beat the Huns should have been discouraged because it put too much money into the pockets of various manufacturers, or that we shouldn't build good roads, because the contractors made money out of it.

Country Bankers Can Help the Tractor Movement

And don't forget your state banking department, for that department has a lot to do with a successful tractor drive. There are some states where even today the country bankers look sidewise at a tractor loan. Tell your state banking department to get in touch with Federal Reserve heads who know what has been done on tractor loans in various sections of the country. Let them write the head of the Ohio state banking department. They will find that Ohio banks loaned money without stint on tractors in 1918, and that not a single case has yet come up where the tractors didn't take care of the loan with ease.

Tractors put much money into the country banks, and for this very reason country bankers should do their part in making it possible to get tractors into their counties.

Yes, the time is here, right now, to drive the tractor home as an institution. To put it across with the American farmer just as the plow was put across, or as the reaper and the binder were put on the map.

Gather together the forces that do things in your state, get the "go-getters" on the job, and make 1919 the year, memorable, not only as the year of the big peace conference, but as the year when the tractor was finally sold to the American people as an institution, as a part of the American farm equipment; quite as commonplace in the barnyard and in the fields as the mower, the hay rake, the lumber wagon.

Put your state on the map in 1919 as a state where the tractor idea has been sold to the farmer beyond any possible question.

The War Industries Board Will Continue Advisory Work

WASHINGTON, Dec. 18.—In order to aid companies by making adjustments and settlements in the shortest time possible, the Automotive Products Section of the War Industries Board, under the direction of C. C. Hanch, will continue for some time its functions in an advisory capacity. This advisory work will have to do with the cancellation or reduction of automotive requirements and reconversion of the industry to a peace basis. Official assurance is given that the greatest care will be used in stopping war work and turning industries to peace work, with a broad consideration for labor.

Capacity Analysis of Truck Production for 1918 and 1919

WASHINGTON, Jan. 6.—The National Automobile Chamber of Commerce has compiled the following figures, which show the trend in demand for trucks of all makes in the various capacities:

	1918		1919 (estimated)	
1-ton & under.	100,417	47.9	153,515	54.3
1½ to 2½ tons.	79,070	37.6	88,613	31.4
3 to 4 tons.....	25,128	11.9	21,676	7.7
5 tons	5,079	2.4	15,907	5.7
Over 5 tons ...	406	0.2	2,683	0.9
Totals	210,100	100.0	282,394	100.0

In connection with the above figures C. L. Halladay, chief engineer at the Washington office of the N. A. C. C., comments as follows:

"It is very evident that vehicle speed is the determining factor which is forcing the decrease in the 3 and 4-ton sizes.

"The 5-ton size is equally as fast as the 3 and 4-ton size under practical operating conditions, costs little if any more to operate, and load conditions demanding a 3 or 4-ton size can very readily and economically be handled, giving better service with less maintenance cost in the larger size.

"This means that the 5-ton size is going to have practically a speed equivalent to the lighter sizes. Truck speed now is not a matter of engineering but one of legislation for the municipality and road construction for the State Highway Boards.

"I venture to predict that within a period of five years we will have intercity truck freight service, which will maintain an average speed of 20 m.p.h. and that the type of truck will be a tractor with semi-trailer—the tractors serving or operating within their own zone of 100 to 150 miles and the trailers running through to destination.

"Standardization of mounting semi-trailers on tractors should be sought and have a very definite place in the minds of progressive truck engineers of today, the dominating feature of which must be adequate length or wheelbase of the tractor so that ample space is provided for centralizing, over the rear axle of the tractor, at least 50 per cent. of the trailer load. Too much load on the trailer axle makes for difficult handling and a consequent loss in road speed. For this reason, legs or jacks are of little value as a means of support when changing trailers to other tractors; means for handling the front end of the trailer must be provided at terminals from overhead.

"The semi-trailer will not be used, except in special cases, other than on the long runs; trucks of the conventional type will act as pick-ups and deliver the freight to the terminal houses, where the trailers will be loaded and dispatched. This will save time and reduce the total investment to an economic point."

N. A. C. C. Asks Larger Appropriations by Congress for Export Trade Development

Congress has been asked to increase its appropriations to aid the extension of the export trade of the automobile industry in a resolution passed by the National Automobile Chamber of Commerce, New York. The resolution follows:

"Whereas, the National Automobile Chamber of Commerce believes that the welfare of the country demands an increasing exportation of manufactured goods when the war is over, and

"Whereas, the National Automobile Chamber of Commerce believes that the Government can and should assist in this expansion of our foreign trade, and

"Whereas, Congress has heretofore entrusted the stimulation of foreign trade to the Bureau of Foreign and Domestic Commerce of the Department of Commerce, which, as a purely promotive organization, with the aid of the Consular Service of the State Department, has done more than any other agency to increase the value of our exports, and

"Whereas, the exports of automobiles and accessories, during the year 1915, amounted to $111,554,000; in 1916 to $120,600,000; in 1917 to $119,800,000, being sent to eighty-two different countries; and for the first seven months of 1918 to $56,943,000, be it

"Resolved: That in particular, the Bureau of Foreign and Domestic Commerce be asked to send commercial investigators to make reports on automobile conditions in foreign countries, together with the possibility of sales there of American cars, particularly in Europe, Orient, South America, South Africa and Australia; and be it further

"Resolved: That the National Automobile Chamber of Commerce strongly favors an emergency appropriation for use during the next 12 months, and a further appropriation sufficient to carry out the excellent but modest program framed by the Bureau of Foreign and Domestic Commerce for the fiscal year of 1920; and be it further

"Resolved: That a delegation from the membership of the National Automobile Chamber of Commerce wait upon the appropriate Congressional Committee in support of this matter and that a copy of these resolutions be sent to each member of Congress."

Gomery-Schwartz to Distribute Knickerbocker Forma-Tractor

PHILADELPHIA, Dec. 30.—The Gomery-Schwartz Motor Car Co., local dealer in Hudson passenger cars and Stewart motor trucks, is a newly-appointed distributor of the Knickerbocker Forma-Tractor. The territory covered by the company will include eastern Pennsylvania, southern New Jersey, Delaware and Maryland.

Trucks and Trailers Greatly Increase Tonnage, Hauling Sand and Gravel

Save Nearly $2700 in Three Months Over What It Would Have Cost by Doing the Same Work With Horses

By C. P. SHATTUCK

THERE is an old saying to the effect that Dame Opportunity knocks but once at every man's door and that few heed her summons. When the timid old lady tapped at the door of George F. Pettinos and he bid her welcome, she whispered in his ear that under the scrub oaks of certain apparently worthless land near Millville, N. J., were thousands of dollars in the form of sand and gravel, highly prized by foundries, etc. And it is rumored that when the old lady found her protege utilizing horses in his attempt to wrest his fortune from the soil she paid him a second visit and whispered another suggestion. It was to use a motor truck and trailers. If she hadn't, this story would never have been written.

About two miles from the freight yard or siding at Millville, N. J., which is about 30 miles south of Camden as the crow flies, lies quite a number of acres of what is termed worthless land, land on which nothing will grow except scrub oaks. For years this land went begging although it could have been purchased for few dollars an acre. About 15 acres of it is now one of the finest sand and gravel pits in the country and George F. Pettinos is turning this former worthless soil into good U. S. A. dollars and the motor truck and trailers have increased the output approximately 70 per cent.

Following conventional practice, Mr. Pettinos used horses in opening up the pit, but as the work progressed it became apparent that it would have to be handled on a larger scale. A track was laid to the pit, the material dug out by the steam shovel and brought to the loading trestle by a small locomotive and dump cars. Four two-horse teams were employed hauling the sand, etc., to the freight cars 2 miles distant or 4 miles the round trip. These teams required four drivers at $3.60 a day and the feed per horse was $1.50 a day, a total cost of $26.40 a day. These figures did not include shoeing, wear and tear of harness and wagons, etc. Aside from the cost it was found that the teams working at their best would only haul 20 loads per day or 35 tons. In other words, it cost about 76 cents per ton to deliver the material to the freight cars.

Truck Replaces Horses

In June a salesman of Kaufmann-Stowers Co., Inc., New York distributors of the Nash line of commercial cars, visited Mr. Pettinos and after making a careful study of the transportation problems involved, advised the use of a 2-ton Nash four-wheel drive and also suggested the use of trailers because of the short haul. George Cline, Jr., manager of the Troy Trailer Sales Co., of New York, was called in, and after analyzing conditions, recommended the use of three 5-ton Troy trailers, advising that the shuttle method be employed.

The plan worked out by the trailer expert follows conventional practice, in that the truck is kept in practically constant operation, hauling between the loading trestle at the pits and the railroad. The truck leaves the pits at 6.30 each morning, hauling two trailers which are loaded the previous night just before the workmen stop. These trailers are hauled to the freight cars and the third or empty trailer is picked up on the return trip of the truck and hauled to the loading trestle. The only delay is the time consumed while this trailer is being loaded, but thereafter the truck shuttles back and forth, hauling a loaded trailer to the freight siding and returning with an empty. This continues until the end of the day, when the truck picks up the two empties at the freight siding and leaves them at the trestle for the morning trip as previously explained.

Keeps Loading Crews Busy

Although the round trip is 4 miles, the truck keeps the steam shovel on the jump loading cars and crews. The engine pulls the cars from the pits to the loading trestle, where they are dumped into the trailer. In arriving with an empty trailer the truck pulls in back of the loaded one, the drawbar is uncoupled

Showing Loaded Trailer at Trestle, and Method of Loading

The truck pulls out by the trailer, and the empty trailer is pulled in place by a rope attached to the loaded trailer when truck moves away with load

The Sand, Gravel, etc., is Brought to Freight Cars Two Miles From Pit and Loaded by Hand

and the truck pulls out and around and is coupled to the loaded trailer. A workman then couples the empty to the loaded trailer with a rope so that when the truck starts the loaded trailer pulls the empty into position, the workman, of course, uncoupling the empty at the proper instant. This saves the time generally wasted when using a truck to haul out the loaded trailer and pulling or backing the empty into position. Constant practice has made the coupling man accurate in locating the empties.

Tonnage Greatly Increased

Generally the truck functions as a hauling unit only, but it has carried tons of material. During the first three days it was placed in service it hauled 86 tons, equalling the record of the four teams on the first day. The fourth day in service was spent going to Philadelphia after the second trailer and a second trip was made after the third trailer. It is interesting to note that the truck and one trailer hauled 44, 64 and 72 tons during the first three days, which explains the 86 tons hauled by the truck during July. Production was greatly increased with the addition of the second trailer, and when the third was placed in service the equipment hauled on an average 112 tons for seven consecutive days. The greatest tonnage was July 18, when 154 tons were delivered to the loading crew at the freight siding. During August the equipment hauled over 100 tons daily for one-third of the working days.

Trailers Overloaded

Despite instructions to the contrary the trailers are being overloaded, a practice common with users of similar equipment, but which should be discouraged. An accompanying table giving the average tonnage per trip shows this.

	Working Days	Trips	Tons Hauled	Average Trips Daily	Average Tonnage Per Trip	Average Tonnage Daily
July	25	259	1753½	10.9	6	70
August	19	168	1111	8.8	6	58.5
September	15	173	1242	11.6	7	82.8

It should be borne in mind that the variation on the average daily tonnage is due to the fact that the equipment has not always been operated to capacity, the truck having been utilized for hauling material for repairing the roads, lumber for pits and making other trips. This was particularly true in September and explains the small number of working days.

Saves $2,692.80

The use of the Nash truck and Troy trailers has resulted in a great saving, to say nothing of a marked increase in the number of tons delivered to the freight cars. During the months of July, August and September the equipment worked 59 days and hauled 4488 tons. The cost, that of gasoline, oil, grease, repairs and driver's wages, was $720.19, or an average cost of 16 cents a ton. It would have taken the former horse equipment 139 days to haul the same tonnage, providing the horses could maintain their peak load, which is doubtful, and at 76 cents per ton (cost of drivers and feed only), it would have cost $3410.88. The truck and trailers have, therefore, effected a saving of $2692.80, to say nothing of the time conserved, and time is money.

Low Cost per Ton

The cost of 16 cents per ton is obtained from cost figures supplied by Mr. Pettinos and is computed on operating costs only, as are the horse costs. Another set of figures shows that the cost of delivering the material to the freight siding was .214, .247 and .25 cents for July, August and September respectively, the costs including a monthly charge of $150 for depreciation on the equipment, the cost of which is estimated at $3750 for the Nash truck and $5250 for the Troy trailers. In computing costs the equipment is charged off at the end of 5 years. No charge is made for interest on investment, tires, etc. The average total cost per ton for excavating, transportation and loading during the months of July, August and September was 53, 50 and 54 cents respectively. These costs include the wages of the

Total Costs for Excavating, Hauling, Loading, etc.

	JULY	AUGUST	SEPTEMBER
Total operating costs	$262.46	$279.25	$178.48
*Less expense	18.79	89.44*	4.50*
	$243.67	$189.81	$173.98
Depreciation	150.00	150.00	150.00
	$393.67	$339.81	$323.98
Excavating, labor, etc.	592.50	290.08	367.52
	$986.17	$690.45	$691.50
Cost per ton	.536	.50	.54

*Less expense when truck was not hauling.

Operating Costs of Truck and Trailers

	TONS HAULED					FUEL		OIL		GREASE					
	TRUCK	TRAILERS	TOTAL TONS	TRIPS	MILES TRUCK	GALS.	COST	PINTS	COST	LBS.	COST	REPAIRS, Etc.	DRIVER	TOTAL OPERATING COSTS	COST PER TON
July	86	1753	1839	273	1298.5	480	$109.90	37	$2.66	146	$14.60	$3.73	$131.57	$262.46	$0.14
August	131	1242	1373	224	978.9	404	95.21	51	4.08	65	6.50	27.16	146.30	279.25	.20
September	165	1111	1276	179	742.9	236	54.62	42	3.36	20	2.00	.....	118.50	178.48	.14
Totals	383	4106	4488	676	2020.3	1120	$259.73	130	$10.10	231	$23.10	$30.89	$396.37	$720.19	$0.16

The Nash Four-Wheel Drive Truck Hauling a Five-Ton Troy Trailer in Excavating Work at Millville, N. J.

and the truck pulls out and around and steam shovel operator at $3.50 a day, engineer at $5.50 a day, labor, etc.

With the method used in arriving at the cost per ton the three trailers with a depreciation charge of $87.50 a month (charged off in 5 years) are being operated at the unusually low cost of 6 cents per ton. Computing the interest on investment at 4 per cent. and a daily repair charge of 7 cents per trailer (a figure utilized by a large operator of trailers), and including New Jersey license fees of $39 a year, the cost per ton would be slightly over 8 cents. This does not include insurance, however, nor cost of garaging.

As is obvious from the figures, the cost of the equipment operating under the conditions obtaining at Millville demonstrates the practicability and efficiency of trailers in combination with trucks and proves that Dame Opportunity made no error when she advocated a truck and trailers for turning the sand of the Millville desert into golden dollars.

Motor Trucks Displace Mule Teams in Southern Orchards

DURING the session of the Horticultural branch of the Southern Commercial Congress at Baltimore, December 11, Leo Cohil gave a very interesting outline of the work of the motor truck in the Cohil fruit orchards. The conclusions he drew from his own experience were that the day of the mule in work of that sort in the South has passed, at least with the progressive farmer, for the trucks he employed did so much better work than the old fashioned mule that there could be no argument as to the greater efficiency of the motor-propelled vehicle.

A total of 30,000 barrels of apples were handled by his motor trucks during the season. Mr. Cohil said he had dreamed in years gone by that this method of handling his fruit might some day become a fact, but always felt till this year that mule teams were a fixture on southern farms that would never be displaced. But as each year's crop grew larger, he saw the necessity of some method of handling the apples other than with mules, for he could not get enough mule teams to do the work as fast as it had to be done. He was forced to buy motor trucks.

When he invested in his first motor truck he didn't realize that the mule teams would be in the way, but found that they were, on the roads, at corners, and wherever the truck went, for in his section the roads are narrow. So he abandoned mules altogether, and installed trucks.

For handling the apples from various parts of the orchards to the packing sheds, an average distance of two miles, he used one-ton trucks which carried an average of 1000 boxes per ten-hour day. These smaller trucks were also used for handling the empty barrels, carrying 110 empties at a load on a special body built for this purpose.

From the packing sheds to the railway all fruit was handled in barrels by three-ton trucks, and Mr. Cohil stated that one three-ton motor truck usually handled as much fruit in one day as a mule team hauls in eight days. The haul was about two miles each way, and the motor trucks handled about 700 barrels per day each on this haul.

At the conclusion of Mr. Cohil's address many questions were asked by the orchardists present, who seemed very much interested in this comparatively new method of handling fruit in Maryland. Judging from the interest manifested, Maryland orchardists are good prospects for motor trucks for the coming summer.

Vital Relationship of Highways Transport to Post-War Activities*

It is fortunate that the Southern Commercial Congress at its tenth annual Convention is concerned in dealing with the greatest problem of all times, and that during the period of reconstruction, the world can depend upon the men and women of the South to do their full share.

The Southern States with their wonderfully fertile soil and large timber lands have been unable to fully develop their natural resources for lack of adequate transportation facilities and it therefore affords me much pleasure to explain the Vital Relationship of Highways Transport to Post-War Activities.

The war emergency created a number of administrative departments of the Government, but few if any, of these—other than the Council of National Defense—are to continue their activities after peace is declared. It is fortunate, therefore, that the Highways Transport Committee, which is a section of the Council of National Defense, is able to continue its excellent work of educating the nation to the need of proper road transport facilities.

In every state of the Union there exists a State Council of Defense. As these bodies were organized to carry out, primarily, the policies of the National Council of Defense, the logical source through which to build a country-wide organization is the State Councils of Defense. There is today in practically every state in the Union a Highway Transport Committee which, through many county and community committees, is able to directly reach every section in the United States.

The States Committees have been formed under the supervision of the National Committee in Washington, in cooperation with eleven Regional Chairmen.

While the Highways Transport Committee has already accomplished much through educational work and publicity, there is still a great deal to be done, for when war activities cease there will be a general tendency to shirk the still greater duty of serving the Nation during the period of readjustment.

Two of the most important of the policies of the Committee are—the development of the Return Loads movement, and the encouraging of the establishment of Rural Motor Express lines.

The truck for short hauls means the maximum of results with the minimum of labor. It is pick up at one end, delivery at the other, with the cutting out of all intermediate effort, such as unloading at the freight station, loading to freight car and loading the truck. Four distinct operations

*Extracts from address made by C. A. Musselman, of the Highways Transport Committee of the Council of National Defense, at the Southern Commercial Congress.

calling for labor are removed. In the short haul, these operations are reduced from six to two. That in itself is efficiency and is a guarantee of the absolute necessity of the truck for short hauls.

By the placing of the principal railroads under one directing head, scientific management has been made possible. Hence the railroads desiring relief in congested areas availed themselves of the highways transport facilities for the purpose of transferring the short haul to the truck. Men who make a study of all forms of transportation realize that each has its own special field of operation, and no one form can serve all interests best.

It is therefore in the nature of wisdom to adopt that type of transportation which is most satisfactory and economical. For short hauls of merchandise and for the transport of farm products in rural districts, the truck in most instances serves the public best.

Trucks, to be efficient, must not operate one way with a load and then return empty. Return loads are necessary, for it is a waste to wear the road without the load.

The Advantages of Return Loads

The term "Return Loads" is so comparatively new that its advantages are not fully understood by many. A survey of motor trucks using the highways in all parts of the United States proves that a large percentage operates in one direction only with a full load. The amount of lost motion and consequent waste can be easily computed, for if 50 per cent. of such vehicles run one way empty, the total loss of cargo-carrying capacity for the round trip would be 25 per cent. Even in peace times a 25 per cent. waste is a needless economic loss, in addition to which there would be much useless wear and tear on the highways and excessive waste of oils and other supplies.

For example, consider the daily operation of 100 five-ton trucks between two cities 50 miles apart, with half the vehicles going one way empty. You quickly realize that 25 per cent. of the cargo-carrying capacity is not used, and that if the trucks carried full loads both ways, 75 vehicles would do the work of 100 which are not running efficiently. It is reasonable to suppose that there is no method which could be employed which would result in 100 per cent. efficiency but the vast saving effected by the encouragement of the Return Loads movement is so evident to all students of transportation that it is safe to predict that cooperative shipper interests will soon eliminate much of the empty running of road vehicles.

The Chambers of Commerce in many cities have been active in establishing Return Loads Bureaus and bringing together the motor truck owner and shipper, but they have done this largely as a patriotic war measure, for which—in most instances—they have received no remuneration. During peace times it would seem that this work could be carried on by trucking interests, including manufacturers, dealers and owners. It must not be thought that because the saving effected for war may not always be necessary that there is no need for Return Loads Bureaus. In peace times there is no more excuse for extravagance in highways transport than there is in any other form of transportation, and the men vitally interested in the work are the ones to see that wasteful methods are eliminated.

How the Return Load Saves Shippers Money

As a demonstration of what Return Loads Bureaus can do for the shipper, we will take for example a five-ton truck operating over a distance of 100 miles, the charge for which is $1.00 per load per mile, which would make a total for hauling of $100. If the truck owner were able to get a return load, he could afford to charge the second shipper $75 and give the first shipper a rebate of $25. This reduction of 25 per cent. corresponds with the gain in transportation efficiency.

Highways transport is a new tool with which to speed up production, and the best results will be obtained by a broad-minded review of what has been done and an impartial survey of how to do better in the future. Organization is necessary to carry on the policies promulgated by the Highways Transport Committee.

And now we come to the big, new development in our economic life—the Rural Motor Express—one of the best answers yet made to the question: "How can America produce more food?"

2,700,000 Farms in United States

In the United States there are 2,700,000 farms of 100 acres or more, many of which contain over 1000 acres. Very few of these have satisfactory transportation facilities, and many are without a sufficient number of men. Under these circumstances, why further deplete the working force by compelling the farmer, first: to be his own transportation agent; and second: supply him with the poorest form of road-bed on which to operate (in many instances) his antiquated type of vehicle.

All our commercial activities, either pre-war or post-war, are based on two important factors—food and labor. If labor is a controlling factor in all production, is not food also a controlling factor in making wage scales? When food advances in price, the rates of labor increase. Labor may do without luxuries, but it cannot go without food. If by bettering our country roads and encouraging the development of Rural Motor Express lines we improve facilities for the transportation of farm products, we accomplish two nationally important things:—regulating labor costs with less friction between employer and employee; and reducing the cost of living so that the average wage earner can properly support his family.

The establishment of Rural Motor Express lines everywhere is vitally important in our efforts to increase food production. We are told by men in authority in our Food Administration that it will be the duty of this country next year to increase production and sufficiently curtail waste and economize, so that it will be possible for us to supply the nations over-seas with 20,000,000 tons of food. This is no small task, even for a country as great as the United States.

It has been estimated by our statisticians at Washington that 50 per cent. of all perishable foods go to waste on the farms, and that from 40 per cent. to 60 per cent. of the potatoes which are grown never reach the market. Why? The answer is chiefly—lack of adequate transportation facilities. What great industry in this country—other than agriculture, which is the greatest—is not served by suitable transportation agents? Did you ever realize that the farmer, in addition to being a producer, is also a transport agent and usually devotes about one-third of his time to moving what he has raised? If you take from the farmer the task of transportation, you increase his productive ability one-third.

In mercantile enterprises the manufacturer's or merchant's shipping department is also his transportation platform, but the farmer is confronted with the serious problem of almost daily traversing practically impassable highways for miles in order to find a market for his product.

What will change this condition? Will it be Federal control of highways or a fuller realization on the part of States and smaller municipalities of the absolute economic value of good roads everywhere? It very likely will be both, because there has recently come into the mind of nearly every man a full realization of the civilizing influences and the national benefits of good roads. * * *

Federalizing the highway is a subject which no doubt offers many opportunities for debates; but it is to be hoped that after much wisdom of speech and development of many theories we will soon be able to eliminate the "ifs and ands" and get the highways; for the next big development in our economic life is highways transport, and we cannot have a development which so intimately affects all the people of this country without it having National recognition. * * *

The Outlook for Good Roads

Everybody admits that good highways improve property, just as did the building of railways. With this improvement comes an increase in property value out of all proportion to the cost of the road building. Therefore from the standpoint of national wealth, national highways are profitable. Another benefit which is noticeable is the increase in the speed of road transportation, which means greater production per man per hour of service, and therefore an increase in the earning power of both capital and labor.

There is another element which means millions to the Nation—saving. It has been shown that on good, hard concrete road, gasoline consumption is only half of what it is over an ordinary poor country road. Reduction in friction means reduction in cost of operation. If we can save the country's natural resources by obtaining double the transportation with half the fuel consumption, that should be of enough importance to justify the national highway. * * *

There must, however, be a time when all opposition ceases, for we are now standing on the threshold of that era where we will sweep aside obstructions and will build throughout this country a magnificent system of highways which will connect our cities with all country districts. We will tie up the farm interests with our other commercial districts, and when the farmer has a satisfactory highways transport connecting link with all the adjacent country, that moment agriculture becomes a standard business on a sound basis, to which will be attracted brains and capital. * * *

With a return to normal conditions will come a demand for an authoritative body in both Nation and State, with the right to determine road construction and maintenance so as to bring order out of chaos. It has been suggested by some of the leaders in Congress that billions will be spent in the next few years for highways and that the highways transport committees now formed in the various states could lend their support to this very necessary work.

With all the evidence before us, is it not reasonable to feel that we who are so earnestly interested in good roads and improved highways transport facilities should be encouraged by the outlook. When any great movement is about to have the momentum which means success, there is something in the atmosphere that electrifies us. It may be the current of public opinion and I think we all now know that one of the desirable inheritances of the war will be the advance in our agricultural and manufacturing facilities based on highway improvements.

Buyers' Information Commercial Car Review

(Eastern Section)

On the following pages is given a complete review of the Commercial Car Models that will be manufactured for the coming season by Eastern American Manufacturers.

See Complete Indexes on Pages 40 and 41.

THIS is the first or Eastern Section of the Review, and includes trucks manufactured in the following States: Connecticut, Delaware, District of Columbia, Georgia, Kentucky, Maryland, Massachusetts, New York, New Hampshire, New Jersey, North Carolina, Ohio, Pennsylvania and West Virginia.

The second or Western Section will be issued February 15th, and will contain a review of trucks made in the following States: California, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Nebraska, Oregon, Texas, Washington and Wisconsin.

The data given in this Review was supplied direct by the makers.

Key to Abbreviations will be found on the leaf attached to this page; when this is opened out it will be found very convenient for references. Indexes will be found on pages 40 and 41.

Criticisms on this Buyers' Information Review are invited.

Horse Power Formula.—All horse powers are calculated by the N.A.C.C. formula: $H.P. = \frac{D^2N}{2.5}$, where D is the bore in inches and N is the number of cylinders.

KEY OF ABBREVIATIONS

Used in the Specifications of Cars Included in the Annual Commercial Car Review

Own—Own Make
Opt—Optional

Engine: Cont—Continental
Her—Hercules
H-Sp—Herschell-Spillman
Lite—Light Mfg. & Foundry Co.
Lyco—Lycoming
Ster—Sterling
Wau—Waukesha
Wis—Wisconsin

Valve Location: L—ELL-Head
T—TEE-Head
O—Overhead

How Cooled: C—Centrifugal Pump
G—Gear Pump
P—Water Pump
T—Thermo-Syphon
W—Water

Radiator (Make or Type): Bus—Bush
Can—Candler
EM—English-Mersick
Eur—Eureka
Fed—Fedders
Flex—Flexo
GO—G. & O.
Har—Harrison
Hovn—Hooven
Idl—Ideal
JMS—Jamestown
Lng—Long
McC—McCord
May—Mayo
MR—Marlin-Rockwell
Per—Perfex
R-T—Rome-Turney
Stan—Standard

C—Cellular
T—Tubular
H—Honeycomb

Tires: (Solid unless otherwise stated).
*—Pneumatic
D—Dual
S—Steel
T—Triple

Lubrication: C—Centrifugal Pump
Fo—Force-Feed
FG—Force and Gravity
FS—Force and Splash
Sp—Splash Feed
P—Water Pump

Carburetor: B&B—Ball & Ball
Cart—Carter
Ens—Ensign
Flch—Flechter
Holl—Holley
John—Johnson
Mar—Marvel
Mas—Master
Mill—Miller
Strm—Stromberg
Shk—Shakespeare
Sheb—Schebler
Spc—Special
Till—Tillotson
Zen—Zenith

Ignition System: (Make or Type)
At-Kt—Atwater Kent
Au-L—Auto-Lite
Bat—Battery
Bosh—Bosch
Berl—Berling
Conn—Connecticut
Delc—Delco
Dix—Dixie
Eism—Eisemann
King—Kingston
Mag—Magneto
NE—North East
POL—Prest-O-Lite
Sim—Simms
Spld—Splitdorf

Engine Starter: Au-L—Auto Lite
Bosh—Bosch
Bij—Bijur
Dyn—Dyneto
G&D—Gray & Davis
L-N—Leece-Neville
West—Westinghouse

Clutch: B—Borg & Beck
C—Cone
D—Disc
F—Fuller
G—Detroit Gear & Machine
H—Hartford
L—Brown-Lipe
M—Merchant & Evans (Hele-Shaw)
U—Muncie
W—Warner
O—Own

Transmission: B-Lipe—Brown-Lipe
Cott—Cotta
Covt—Covert
Det—Detroit
Durst—Durston
Full—Fuller
G-Lee—Grant-Lees
I-CI—Individual Clutch
MM—Mechanics Machine Co
Munc—Muncie
Plan—Planetary
Prog—Progressive
Rock—Rockford
Selec—Selective
Warn—Warner

Drive: B—Bevel Gear
C—Chain
Ct—Concentric Spur
F—Friction
I—Internal Gear
O—Own
R—Roller
S—Shaft
SB—Spiral Bevel
Sp—Spur
W—Worm

Universal: Arv—Arvac
Bld—Blood Brothers
Hart—Hartford
K-B—Kinsler-Bennett
M—Merchant & Evans
Spic—Spicer
Ther—Thermoid
UM—Universal Machine Co
UP—Universal Products Co

Rear Axle: Cel—Celfor
Cl—Clark
Emp—Empire
Rock—Rockford
Russ—Russel
Sals—Salisbury
Shel—Sheldon
Timk—Timken
Torb—Torbensen
W-M—Weston-Mott

Flot—Full Floating
½-Fl—Semi-Floating
¾-Fl—¾ Floating
⅞-Fl—⅞ Floating

Spring Suspension:
CC—Cleveland-Canton
Det—Detroit
IC—Iron City
Kal—Kalamazoo
Mar—Maremont
Math—Mather
Nat—National
Row—Rowland
Per—Perfection
Shel—Sheldon
SP—Spring Perch
Stan—Standard
Ster—Sterling
Tut—Tuthill
US—United States

Cant—Cantilever
Elip—Full Elliptic
S-El—Semi-Elliptic
¾-El—¾-Elliptic
S&C—Semi-Elliptic and Cantilever
S&¾—Semi-Elliptic and ¾-Elliptic

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Gem—Gemmer
Jac—Jacox
Lav—Lavine
W—Worm
Warn—Warner
Wohl—Wohlrab

Governor: C—Centrifugal
Cont—Continental
Del—Delaney
Dup—Duplex
McC—McCanna
Mer—Merrill
Mon—Monarch
Pier—Pierce
Rug—Ruggles
Simp—Simplex
Wau—Waukesha

EXTRA ABBREVIATIONS USED ON ELECTRICS

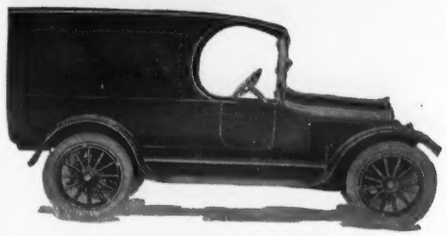
Battery: Exid—Exide
Edis—Edison
Phil—Philadelphia

Motor: Gn-El—General Electric Co.
West—Westinghouse

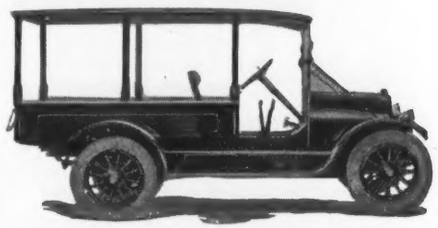
Controller: Gn-El—General Electric Co.
West—Westinghouse

Indexes arranged alphabetically and according to price are on pages 40 and 41

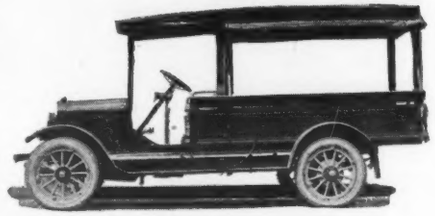
FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE



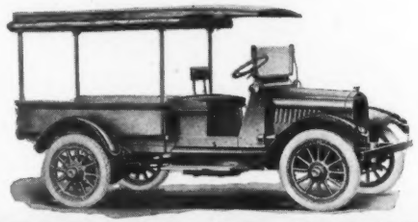
Overland 800-lb. Model, $1000.
Willys-Overland Co., Toledo, Ohio.



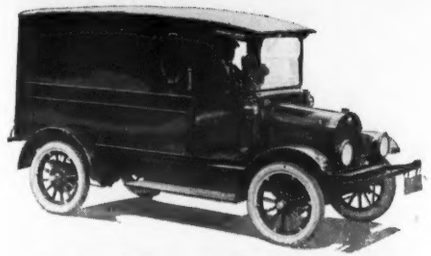
Overland 1200-lb. Model, $1075.
Willys-Overland Co., Toledo, Ohio.



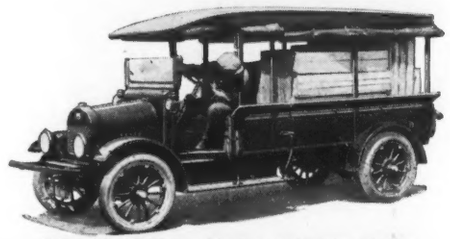
Atlas 19, 1500-lb. Model, Chassis, $1135.
Martin Truck & Body Corp., York, Pa.



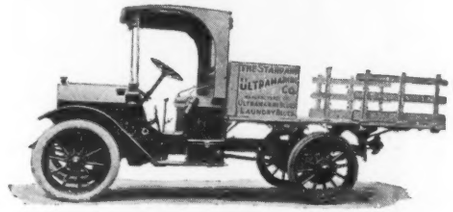
Old Hickory, 1500-lb. Model, Chassis, $995.
Kentucky Wagon Mfg. Co., Louisville, Ky.



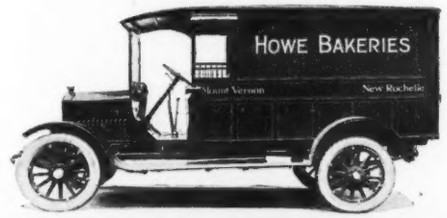
Vim 21, 1000-lb. Model, Chassis, $945.
Vim Motor Truck Co., Philadelphia, Pa.



Vim 26, 1500-lb. Model, Chassis, $1200.
Vim Motor Truck Co., Philadelphia, Pa.

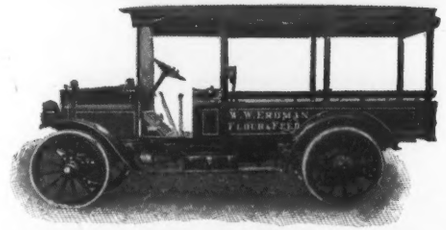


Tiffin A, 1500-lb. Model, Chassis, $1100.
Tiffin Wagon Co., Tiffin, Ohio.

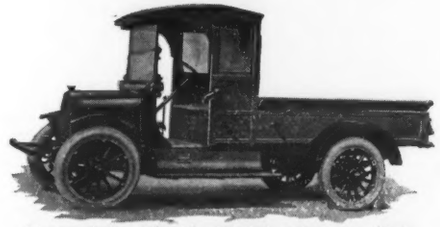


Rainier R-2, 1500-lb. Model, Chassis, $1350.
Rainier Motor Corp., Flushing, N. Y.

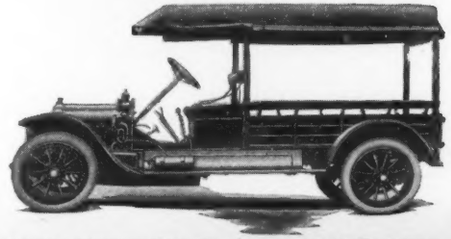
Rainier R5, 1000-lb. Model, Chassis, $1250.
Rainier Motor Corp., Flushing, N. Y.



Hahn B, 1500-lb. Model, Chassis, $1225.
Hahn Motor Truck & Wagon Co., Hamb[illegible]g, Pa.



Stewart 6, 1500-lb. Model, Chassis, $950.
Stewart Motor Corp., Buffalo, N. Y.



White GBBE, 1500-lb. Truck, Chassis, $2300.
The White Co., Cleveland, Ohio.

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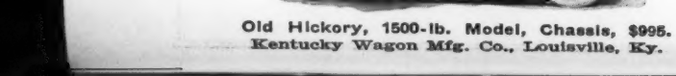
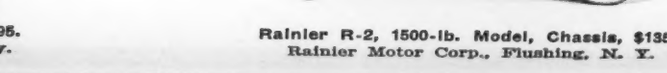
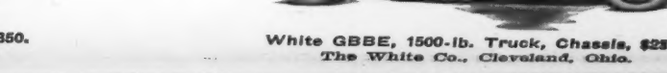


Old Hickory, 1500-lb. Model, Chassis, $995.
Kentucky Wagon Mfg. Co., Louisville, Ky.



Rainier R-2, 1500-lb. Model, Chassis, $1350.
Rainier Motor Corp., Flushing, N. Y.

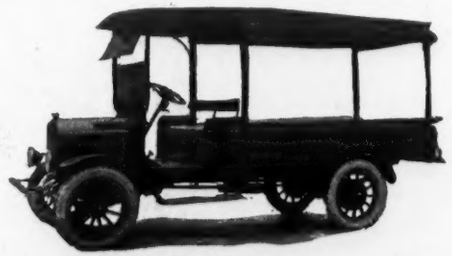


White GBBE, 1500-lb. Truck, Chassis, $2300.
The White Co., Cleveland, Ohio.

800, 1000, 1200, 1500 Pound Gasoline Commercial Cars

Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
800 POUNDS																												
Overland	1777	1000	Own	4	3⅜x5	18.2	4	1/16	L	T	C	FS	Till	Conn	Au-L	C	Selec	3	Own	B	¾Fl	104	S&C	31x4*	31x4*	Own	....	63.8
1000 POUNDS																												
Rainier R5	2200	1250	Lite	4	3¼x4⅛	18	3	1/16	L	T	Har	FS	Zen	Dix	....	L	B-Li	3	Hart	W	½Fl	115	Per	33x4*	33x4*	Lav	....	80
Vim 21	1950	945	Own	4	3x4½	14.4	3	1/16	L	T	H	FS	Zen	Dix	....	C	Selec	3	Spic	B	Own	108	Shel	31x4*	31x4*	Jac	....	..
1200 POUNDS																												
Overland	2179	1075	Own	4	4⅛x4½	27.2	2	⅜	L	T	C	FS	Till	Dix	Au-L	C	Selec	3	Own	SB	¾Fl	106	S-El	33x4½*	33x4½*	Own	....	68.8
1500-POUND																												
Atlas 19	2320	1135	Lyco	4	3½x5	19.6	3	1/16	L	T	H	Sp	Cart	Remy	Remy	B	Selec	3	Arv	B	Hess	118	Row	32x4*	32x4*	CAS	....	75
Hahn B	3200	1225	Cont	4	3½x5	20	3	1/16	L	T	Idl	Fo	Strm	Mag	....	D	Det	3	Spic	I	Torb	117	Del	34x3	34x3½	Lav	....	65
Old Hickory M	2100	995	Lyco	4	3¼x5	16.9	3	1/16	L	T	C	Sp	Cart	Will	Dyn	C	Selec	3	Own	B	½Fl	112	....	33x4*	33x4*	W	....	60
Rainier R-2	2700	1350	Lite	4	3¼x4⅛	16.9	3	1/16	L	T	Har	FS	Zen	Dix	....	L	B-Li	3	Hart	W	½Fl	125	Per	34x4*	34x4*	Lav	....	80
Stewart 6	1750	950	LRoi	4	3⅛x4½	15.6	3	1/16	L	T	C	FS	Zen	Berl	....	D	MM	3	Own	Sp	Cl	110	Det	33x4*	33x4*	Dit	....	80
Tiffin A	2575	1100	Cont	4	3½x5	19.6	3	1/16	L	T	T	FS	Sheb	Bosh	....	C	Det	3	UP	I	Russ	110	Kal	35x4½*	35x4½*	Lav	....	80
Vim 26	2200	1200	Own	4	3x4½	14.4	3	1/16	L	T	H	FS	Zen	Dix	....	C	Selec	3	Spic	B	Own	127	Shel	31x4*	32x4½*	Jac	....	..
White GBBE	2960	2300	Own	4	3¾x5⅛	22.5	3	..	L	C	C	FS	Own	Mag	....	D	Selec	4	Own	B	½Fl	133	....	34x4½*	34x4½*	Own	....	..

Bessemer G, 1-ton Truck, Chassis, $1495.
Bessemer Motor Truck Co., Grove City, Pa.



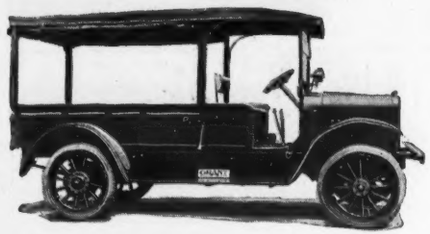
Brinton H, 1-ton Model, Chassis, $1500.
Brinton Motor Truck Co., Philadelphia, Pa.

Corbitt E, 1-ton Model, Chassis, $2000.
Corbitt Motor Truck Co., Henderson, N. C.

1 Ton Gasoline Commercial Cars

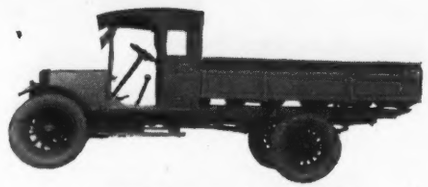
Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Bessemer G	....	1495	Cont	4	3½x5	19.6	3	1/16	L	T	C	FS	Zen	Dix	....	F	Full	3	Arv	I	Torb	124	Per	34x3½	34x4	Ross	....	..
Brinton H	2800	1500	Wis	4	3¼x5	16.9	3	1/16	L	T	T	FS	Rayf	....	....	D	Selec	3	....	W	Flot	125	....					
Corbitt E	3050	2000	Cont	4	3¾x5	22.5	3	1/16	L	T	Idl	Sp	Strm	Eism	G&D	D	Full	3	....	W	Shel	130	Shel	34x3½	34x4	Lav	Pier	80

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

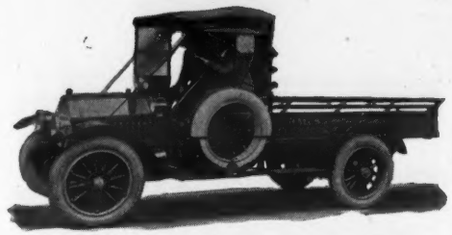


Grant 12, 1-ton Truck, Chassis, $1125.
Grant Motor Car Corp., Cleveland, Ohio.

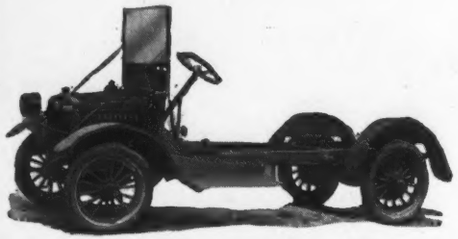
Garford 75C, 1-ton Model, Chassis, $2500.
Garford Motor Truck Co., Lima, Ohio.



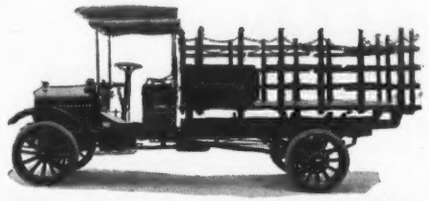
Piedmont O, 1-ton Model.
Piedmont Motor Corp., Lynchburg, Va.



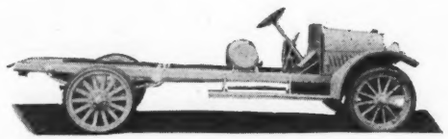
Gabriel C, 1-ton Model, Chassis, $1950.
Gabriel Motor Truck Co., Cleveland, Ohio.



Hoover 15-B, 1-ton Chassis, $1435.
Hoover Wagon Co., York, Pa.



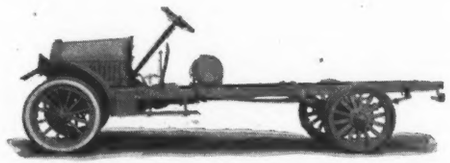
Selden TXR, 1-ton Model, Chassis, $2000.
Selden Motor Vehicle Co., Rochester, N. Y.



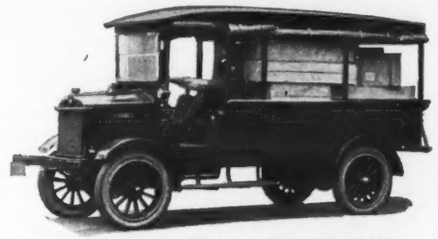
Norwalk 1-ton Chassis, $1495.
Norwalk Motor Car Co., Martinsburg, W. Va.

Mack 1-ton Model, Chassis, $2400.
International Motor Co., New York City.

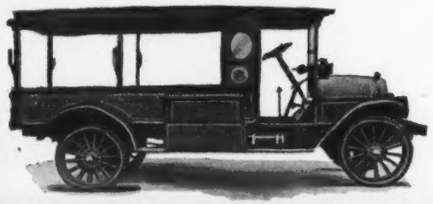
Stewart 8, 1-ton Model, Chassis, $1575.
Stewart Motor Corp., Buffalo, N. Y.



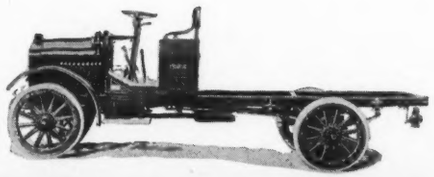
Myers Model 50, 1-ton Chassis, $1495.
E. A. Myers, Pittsburgh, Pa.



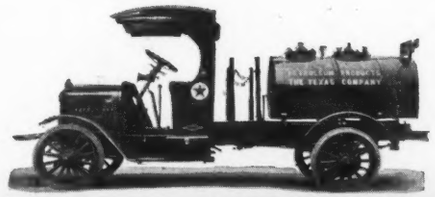
Vim 25, 1-ton Model, Chassis, $2195.
Vim Motor Truck Co., Philadelphia, Pa.



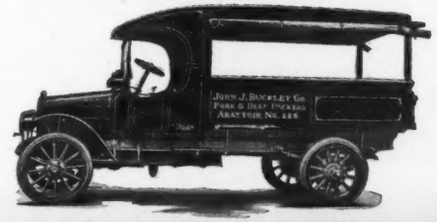
Hahn G, 1-ton Model, Chassis, $1375.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.



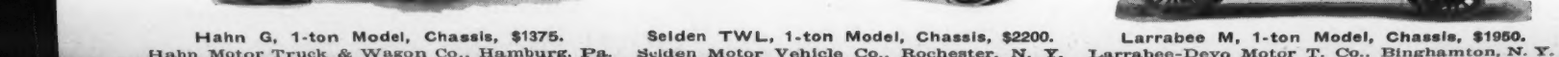
Selden TWL, 1-ton Model, Chassis, $2200.
Selden Motor Vehicle Co., Rochester, N. Y.



Larrabee M, 1-ton Model, Chassis, $1950.
Larrabee-Deyo Motor T. Co., Binghamton, N. Y.



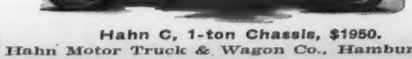
Hahn C, 1-ton Chassis, $1950.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.



Hahn G, 1-ton Model, Chassis, $1375.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.

Selden TWL, 1-ton Model, Chassis, $2200.
Selden Motor Vehicle Co., Rochester, N. Y.

Larrabee M, 1-ton Model, Chassis, $1950.
Larrabee-Deyo Motor T. Co., Binghamton, N. Y.

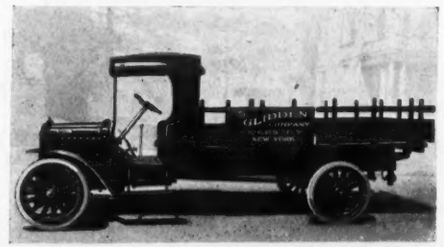


Hahn C, 1-ton Chassis, $1950.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.

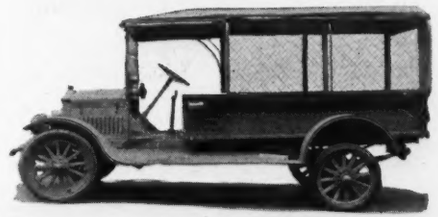
1 Ton Gasoline Commercial Cars—Continued

Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Gabriel C	2750	1950	Buda	4	4¼x5½	38.9	3	3/16	L	C	T	Fo	Rayf	Bosh	L-N	B	B-Li	3	Spic	W	Timk	144	Mer	35x5*	35x5*	Gem	Dup	65
Garford 75C	3900	2500	Buda	4	3¾x5½	22.5	3	3/16	L	C	Own	Sp	Rayf	Spld	....	B	B-Li	3	Spic	W	Timk	128	Per	34x4½*	36x4	Ross	Simp	..
Grant 12	2300	1125	H-Sp	4	3¼x5	16.9	3	¼	L	T	Fed	FS	Cart	Dix	Bij	B	GLee	3	Arv	I	Torb	115	Per	32x4*	32x4*	Dit	....	65
Hahn G	3600	1375	Cont	4	3½x5	19.6	3	3/16	L	T	Idl	Fo	Strm	Mag	....	D	Det	3	Spic	I	Torb	130	Del	34x3	34x4	Lav	....	65
Hahn C	4200	1950	Cont	4	4¼x5¼	30	4	¼	L	C	Own	Fo	Strm	Bosh	....	D	B-Li	3	Spic	W	Timk	136	Del	36x3½	36x5	Ross	Pier	65
Hoover 15-B	2425	1435	Cont	4	3½x5	19.6	3	3/16	L	T	Can	Fo	Sheb	Dix	....	F	Full	3	Acme	W	Shel	120	Shel	32x4*	33x4½*	Lav	....	100
Larrabee-Deyo M	3400	1950	Cont	4	3¾x5	22.5	3	3/16	L	T	Bus	Sp	Sheb	Bosh	....	F	Full	3	UM	W	Shel	130	Mer	34x3½	34x5	Lav	Pier	..
Mack	4350	2400	Own	4	4x5	25.6	3	..	L	C	H	FS	Strm	Dix	....	D	Selec	4	....	Op	Opt	Opt	....	36x4	36x3½D	....	Own	..
Myers 50	2750	1495	Lyco	4	3½x5	19.6	3	3/16	L	T	C	FS	Cart	Delc	Dyn	D	MM	3	UM	W	Emp	130	C-C	34x4*	34x4	CAS	....	75
Myers 55	2700	1460	Lyco	4	3½x5	19.6	3	3/16	L	T	C	FS	Cart	Swis	....	D	MM	3	UM	W	Emp	130	C-C	34x3½	34x4	CAS	....	75
Norwalk	1650	1495	Lyco	4	3½x5	28	3	3/16	L	T	C	Sp	Cart	Delc	Dyn	D	MM	3	UM	W	½Fl	130	C-C	34x4*	34x4	CAS	....	90
Piedmont O	....	...	Lyco	4	3½x5	19.6	3	3/16	L	T	Stan	Fo	Cart	Bat	Dyn	B	Selec	3	Hart	W	Emp	130	S-El	33x4*	33x4	....	....	..
Royal	....	2400	Wis	4	3¼x5	16.9	.	..	..	C	T	...	Strm	Bosh	Opt	B	Own	.	Own	W	Timk	128	Mer	34x4	34x5	Ross	Mon	..
Selden TXR	3000	2000	Cont	4	3½x5	19.6	3	3/16	L	T	Bus	Sp	Strm	Bosh	....	L	B-Li	3	Spic	I	Russ	140	Per	34x3½	34x5	Lav	Pier	70
Selden TWL	3225	2200	Cont	4	3½x5	19.6	3	3/16	L	T	Bus	Sp	Strm	Bosh	....	L	B-Li	3	Spic	W	Timk	140	Per	34x3	34x4	Lav	Pier	70
Stewart 8	2820	1575	Cont	4	3½x5	19.6	3	3/16	L	T	T	FS	Zen	Berl	....	D	Durst	3	Hart	Sp	Cl	130	Shel	34x3½	34x4	Gem	....	80
Vim 25	3900	2195	Cont	4	3¾x5	22.5	3	3/16	L	C	T	FS	Zen	Dix	....	D	Selec	3	Spic	W	Shel	120	Shel	34x4½*	34x4½*	Jac	Dup	..

Collier 16, 1¼-ton Model, Chassis, $1375.
Collier Motor Truck Co., Bellevue, Ohio.



Koehler K, 1¼-ton Model, Chassis, $1450.
H. J. Koehler Motor Corp., Newark, N. J.

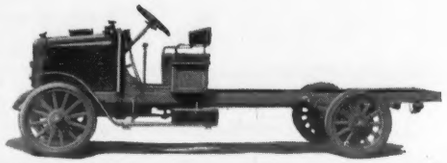


Rainier R-4, 1¼-ton Model, Chassis, $1595.
Rainier Motor Corp., Flushing, N. Y.

1¼ Ton Gasoline Commercial Cars

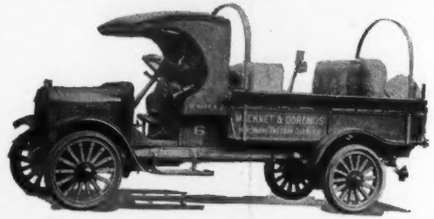
Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Collier	2600	1375	Lyco	4	3½x5	19.6	3	¼	L	T	Jms	Sp	Zen	Conn	Au-L	B	GLee	3	Ther	B	Sals	128	Ster	33x4½	33x4½	Dit	....	50
Koehler K	3000	1450	Own	4	3½x5	19.6	3	3/16	L	T	T	FS	Strm	Eism	....	MM	MM	.	K-B	I	Torb	129	....	34x3	34x4	Own	Mon	70
Rainier	3100	1595	Lite	4	3¼x4½	16.9	3	3/16	L	T	Har	FS	Zen	Dix	....	L	B-Li	3	Hart	W	½Fl	125	Per	31x4*	32x4	Lav	Mon	80

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

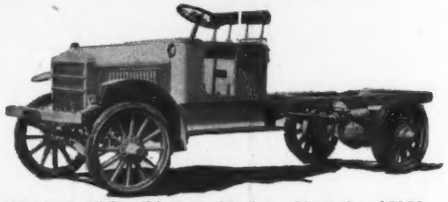


Atterbury 7 R, 1½-ton Model, Chassis, $2575.
Atterbury Motor Car Co., Buffalo, N. Y.

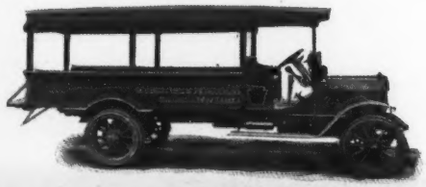
Brockway J2, 1½-ton Model, Chassis, $2450.
Brockway Motor Truck Co., Cortland, N. Y.



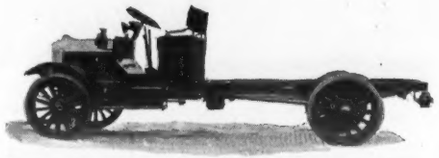
Day-Elder A, 1½-ton Model, Chassis, $1775.
Day-Elder Motors Corp., Newark, N. J.



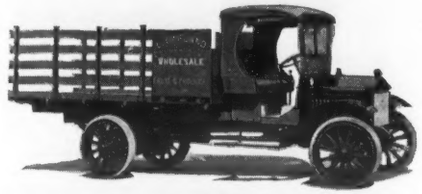
Garford 66B, 1½-ton Model, Chassis, $3000.
Garford Motor Truck Co., Lima, Ohio.



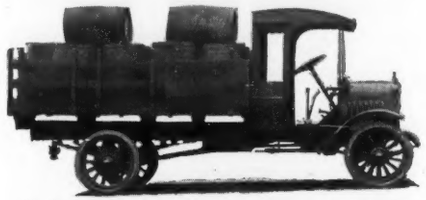
Hahn 1½-ton Model, Chassis, $2225.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.



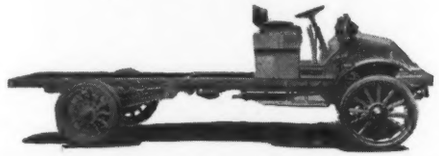
Bessemer H, 1½-ton Model, Chassis, $1945.
Bessemer Motor Truck Co., Grove City, Pa.



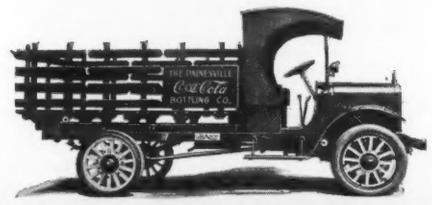
Concord 1½-ton Model, Chassis, $2450.
Abbott-Downing Truck & Body Corp.,
Concord, N. H.



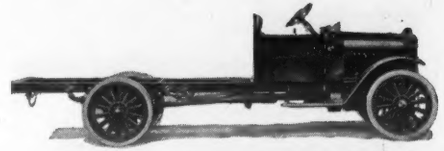
Defiance, 1½-ton Model, Chassis, $1795.
Turnbull Motor Truck & Wagon Co.,
Defiance, O.



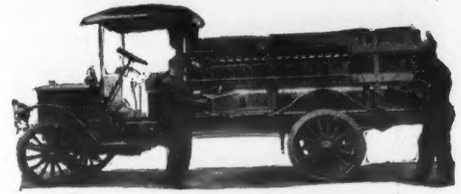
Kelly-Springfield K-32, 1½-ton Worm Drive, Chassis, $2750.
Kelly-Springfield Motor Tr. Co., Springfield, O.



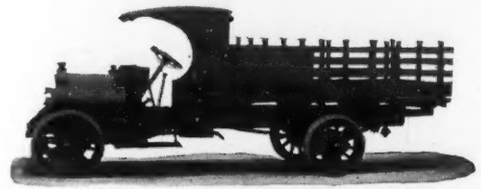
Grant 10 & 11, 1½-ton Chassis, $1885, $1935.
Grant Motor Car Corp., Cleveland, Ohio.



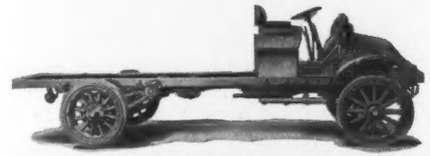
Bethlehem 1½-ton Chassis, $1965.
Bethlehem Motors Corp., Allentown, Pa.



Corbitt D, 1½-ton Model, Chassis, $2400.
Corbitt Motor Truck Co., Henderson, N. C.



Fulton FX, 1½-ton Stake, Chassis, $1850.
Fulton Motor Truck Co., Farmingdale, L. I.



Kelly-Springfield K31, 1½-ton Chain Drive, Chassis, $2750.
Kelly-Springfield Motor Tr. Co., Springfield, O.

Gramm-Bernstein 1½-ton Model, $2450.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.

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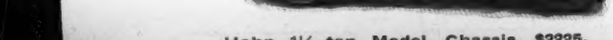
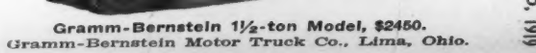


Hahn 1½-ton Model, Chassis, $2225.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.

Grant 10 & 11, 1½-ton Chassis, $1885, $1935.
Grant Motor Car Corp., Cleveland, Ohio.



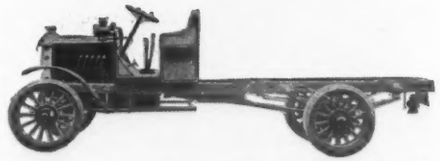
Gramm-Bernstein 1½-ton Model, $2450.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.

Mack 1½-ton Model, Chassis, $2800.
International Motor Co., New York City.

Rainier R6, 1½-ton Model, Chassis, $1890.
Rainier Motor Corp., Flushing, N. Y.

Myers 70, 1½-ton Model, Chassis, $1750.
E. A. Myers Co., Pittsburgh, Pa.

Maccar 1½-ton Model, Chassis, $2750.
Maccar Truck Co., Scranton, Pa.

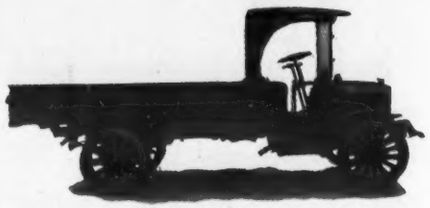


Schwartz 1½-ton Model, Chassis, $2175.
Schwartz Motor Truck Co., Reading, Pa.

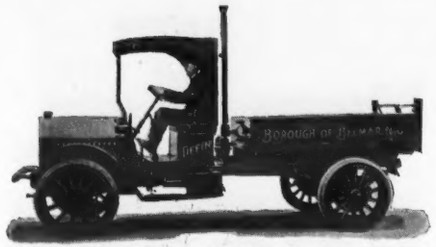
Stewart 9, 1½-ton Model, Chassis, $1975.
Stewart Motor Corp., Buffalo, N. Y.

1½ Ton Gasoline Commercial Cars

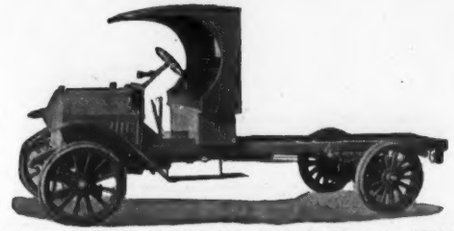
Model a. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Atterbury 7R	4770	2575	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	....	L	B-Li	4	Spic	W	Timk	140	SP	36x3½	36x5	Gem	Pier	96.5
Bessemer H	....	1945	Cont	4	3¾x5	22.5	3	¼	L	T	C	FS	Zen	Dix	....	B	B-Li	3	Arv	I	Torb	144	Per	36x3½	36x5	Ross	....	..
Bethlehem D	3300	1965	Own	4	3¾x4½	22.5	3	¼	L	T	Fed	FS	Sheb	Bat	G&D	B	Det	3	UP	I	Russ	136	Shel	34x3½	34x5	Lav	Mon	85
Brockway J-2	4000	2450	Cont	4	3¾x5	22.5	3	¼	L	T	Bus	FS	Sheb	Eism	Opt	H	B-LI	3	Spic	W	Timk	124	Mer	36x3½	36x5	Gem	Opt	70
Concord A	4000	2450	Buda	4	3¾x5½	22.5	3	¼	L	C	T	Sp	Zen	Eism	....	L	B-Li	3	Spic	W	Timk	140	Per	36x3½	36x5	Ross	Mon	70
Corbitt D	3890	2400	Cont	4	3¾x5	22.5	3	¼	L	T	Idl	FS	Strm	Eism	G&D	D	Fuller	3	....	W.	Shel	138	Shel	36x3½	36x5	Ross	Pier	75
Day-Elder A	3500	1775	Cont	4	3½x5	19.6	3	¼	L	T	Bus	FS	Zen	Berl	....	B	Covt	3	Hart	W	Wis	128	IC	34x3	34x4	Ross	Mon	..
Defiance B	3200	1795	Cont	4	3¾x5	22.5	3	¼	L	T	Per	Sp	Strm	Eism	....	B	GLee	3	Arv	I	Torb	135	Det	34x3½	34x5	Dit	Mon	85
Fulton FX	3120	1850	H-Sp	4	3¼x5	16.9	3	¼	L	T	GO	FS	Cart	Sims	....	B	Det	3	Hart	I	Russ	136	S-El	34x3½	34x5	Lav	....	70
Garford 66B	4180	3000	Buda	4	3¾x5½	22.5	3	¼	L	C	T	Sp	Rayf	Spld	....	L	Own	4	Spic	W	Timk	144	Per	36x3½	36x5	Ross	Simp	..
Gramm-B. W1½	4490	2450	Wau	4	3¾x5¼	22.5	4	¼	L	C	T	Sp	Zen	Eism	....	D	Selec	3	Arv	W	½Fl	130	....	34x3½	36x5	Ross	Wau	70
Grant 10	3000	1885	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Dix	Remy	B	GLee	3	Arv	I	Torb	124	Per	34x4½ *	34x5	Jac	Pier	65
Grant 11	3100	1935	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Dix	Remy	B	GLee	3	Arv	I	Torb	140	Per	34x4½ *	34x5	Jac	Pier	65
Hahn D	4600	2225	Cont	4	4½x5	30	4	¼	L	C	Own	Fo	Strm	Bosh	....	D	B-Li	3	Spic	W	Timk	142	Del	36x3½	36x6	Ross	Pier	65
Kelly-Spfd. K31	4590	2750	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	....	C	Covt	3	Own	C	Dead	144	Per	36x3½	36x6	Gem	Own	89
Kelly-Spfd. K32	4685	2750	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	....	C	Covt	3	Spic	W	½Fl	144	Per	36x3½	36x6	Gem	Own	89
Maccar L	4050	2750	Cont	4	4½x5¼	27.2	3	¼	L	C	Own	...	Strm	Bosh	....	L	B-Li	3	Spic	W	Timk	150	Mer	36x4	36x5	Ross	....	..
Mack	4900	2800	Own	4	4x5	25.6	3	..	L	C	H	FS	Strm	Dix	....	D	Selec	4	....	Op	Opt	Opt	....	36x4	36x3½D	....	....	..
Myers 70	3000	1750	Lyco	4	3½x5	19.6	3	¼	L	T	C	FS	Cart	Delc	Dyn	B	GLee	3	UM	W	Emp	130	C-C	34x3½	34x5	CAS	....	75
Myers 75	2950	1700	Lyco	4	3½x5	19.6	3	¼	L	T	C	Sp	Cart	Delc	Dyn	B	Munc	3	UM	W	Emp	130	C-C	34x3½	35x4	CAS	....	90
Norwalk	1850	1750	Lyco	4	3½x5	19.6	3	¼	L	T	C	FS	Cart	Swis	....	B	GLee	3	UM	W	Emp	130	C-C	34x3½	34x5	CAS	....	75
Piedmont	...	....	Lyco	4	3½x5	19.6	3	¼	L	T	Stan	Fo	Cart	Bat	Dyn	B	Selec	3	Hart	W	Emp	140	S-El	.....	.....	....	....	..
Rainier R-6	3400	1890	Cont	4	3½x5	19.6	3	¼	L	T	Har	FS	Zen	Sims	....	L	B-Li	3	Hart	W	½Fl	133	Per	34x3	34x4	Lav	Mon	80
Royal	....	2800	Wis	4	3¾x5	22.5	.	..	..	C	T	...	Strm	Bosh	Opt	B	Own	.	Own	W	Timk	128	Mer	34x4	34x5	Ross	Mon	..
Schwartz	3500	2175	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Strm	Bosh	....	L	B-Li	3	Hart	I	Torb	140	....	34x3½	34x5	Ross	Pier	..
Stewart 9	3440	1975	Cont	4	3¾x5	22.5	3	¼	L	T	T	FS	Zen	Berl	....	D	Full	3	Hart	Sp	Cl	140	Det	34x3½	34x5	Ross	....	80



Sullivan F, 1½-ton Model, Chassis, $2350.
Sullivan Motor Truck Corp., Rochester, N. Y.



Tiffin GW, 1½-ton Model, Chassis, $2125.
Tiffin Wagon Co., Tiffin, Ohio.

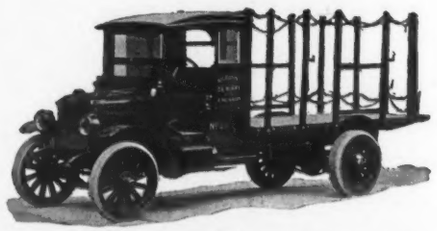


White Hickory H, 1½-ton Model, Chassis, $2400.
White Hickory Wagon Mfg. Co., Atlanta, Ga.

1½ Ton Gasoline Commercial Cars

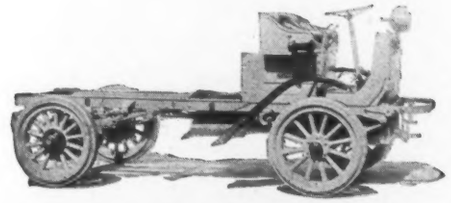
Model a. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Sullivan F	3500	2350	Buda	4	3¾x4½	22.5	3	1/8	L	T	V	Fo	Strm	Bosh	....	H	Covt	3	Hart	W	Timk	129	Mer	36x3½	36x5	Ross	....	68
Tiffin GW	3750	2125	Cont	4	3¾x5¼	22.5	3	1/8	L	C	V	FS	Rayf	Bosh	....	D	Full	3	Acme	W	Shel	135	Kal	36x3½	36x5	Ross	Pier	80
White Hickory H	3975	2400	Cont	4	3¾x5	22.5	3	1/8	L	C	C	FS	Strm	Eism	....	F	Full	3	Arv	W	Timk	144	Shel	36x3½	36x5	Ross	Pier	76

2 Ton Gasoline Commercial Cars

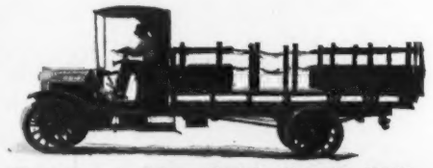


Armleder HW, 2-ton Model, Chassis, $2900.
O. Armleder Co., Cincinnati, Ohio.

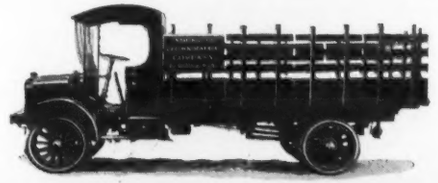
Atterbury 7C, 2-ton Model, Chassis, $2975.
Atterbury Motor Car Co., Buffalo, N. Y.



Autocar XXIF, 2-ton Chassis, $2050.
Autocar Co., Ardmore, Pa.



Bessemer J, 2-ton Model, Chassis, $2490.
Bessemer Motor Truck Co., Grove City, Pa.



Brockway K-3, 2-ton Model, Chassis, $2850.
Brockway Motor Truck Co., Cortland, N. Y.

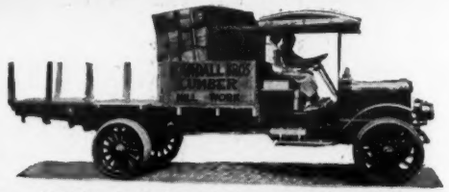
Clydesdale 65, 2-ton Model.
Clyde Cars Co., Clyde, Ohio.

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

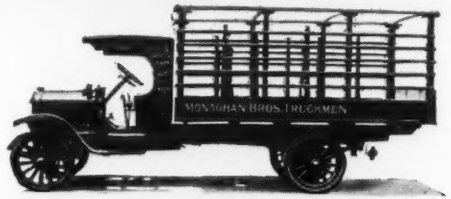
Bessemer J, 2-ton Model, Chassis, $2490.
Bessemer Motor Truck Co., Grove City, Pa.

Brockway K-3, 2-ton Model, Chassis, $2850.
Brockway Motor Truck Co., Cortland, N. Y.

Clydesdale 65, 2-ton Model.
Clyde Cars Co., Clyde, Ohio.



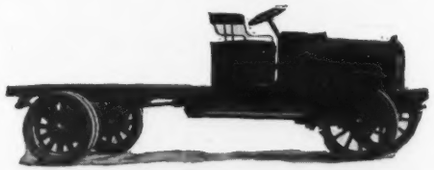
Corbitt C, 2-ton Model, Chassis, $3000.
Corbitt Motor Truck Co., Henderson, N. C.



Day-Elder B, 2-ton Stake, Chassis, $2075.
Day-Elder Motors Corp., Newark, N. J.

Defiance C, 2-ton Model, Chassis, $1995.
Turnbull Motor Truck & Wagon Co., Defiance, Ohio.

Gabriel E, 2-ton Model, Chassis, $3250.
Gabriel Motor Truck Co., Cleveland, Ohio.

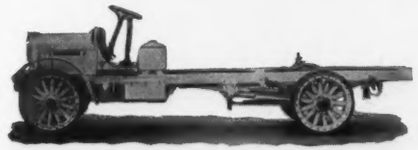


Garford 70B, 2-ton Model, Chassis, $3300.
Garford Motor Truck Co., Lima, Ohio.

Grant 15 & 16, 2-ton Models, $2150, $2250.
Grant Motor Car Corp., Cleveland, Ohio.

Hahn H, 2-ton Model, Chassis, $1950.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.

Hahn E, 2-ton Model, Chassis, $2500.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.

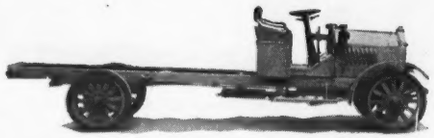


Hurlburt 2-ton Model, Chassis.
Hurlburt Motor Truck Co., New York City.

2 Ton Gasoline Commercial Cars

Model a. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Armleder HW	4550	2900	Cont	4	4⅛x5¼	27	3	3/16	L	C	T	Fo	Sheb	Bosh	....	D	B-Li	3	Opt	W	Timk	Opt	Math	36x4	36x7	Ross	Pier	..
Atterbury 7C	5260	2975	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	....	D	B-Li	4	Spic	W	Timk	153	SP	36x4	36x4D	Gem	Pier	92.5
Autocar F	3750	2050	Own	2	4¾x4½	18	4	3/16	L	C	V	Sp	Strm	Mag	....	D	Prog	3	....	DR	Flot	97	....	3x4	34x5	Own	....	..
Bessemer J	....	2490	Cont	4	4⅛x5¼	27.2	3	3/16	L	..	C	Sp	Rayf	Dix	....	B	B-Li	4	Arv	I	Torb	158	Per	36x4	36x4D	Ross	Pier	..
Brockway K-3	4700	2850	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	Bus	FS	Sheb	Eism	Opt	H	B-Li	3	Spic	W	Timk	Opt	Mer	36x4	36x7	Gem	Opt	70
Clydesdale	4850	....	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	T	Sp	Zen	Bosh	....	L	B-Li	4	Spic	W	Timk	163	Stan	36x4	36x4D	Ross	Own	73
Corbitt C	4850	3000	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	T	Sp	Strm	Eism	G&D	L	B-Li	3	....	W	Shel	148	Shel	36x4	36x7	Ross	Pier	80
Day-Elder B	3300	2075	Cont	4	3¾x5	22.5	3	3/16	L	T	Bus	FS	Zen	Berl	....	B	Covt	3	Hart	W	Wis	144	IC	34x3½	34x5	Ross	Mon	..
Defiance C	3500	1995	Cont	4	3¾x5	22.5	3	¼	L	T	Per	Sp	Strm	Eism	....	B	GLee	3	Arv	I	Torb	135	Det	34x3½	34x6	Dit	Mon	85
Gabriel E	4500	3250	Buda	4	4¼x5½	28.9	3	3/16	L	C	T	Fo	Rayf	Bosh	L-N	B	B-Li	4	Spic	W	Timk	156	Mer	36x4	36x7	Gem	Dup	65
Garford 70B	4590	3300	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Rayf	Spld	....	L	Selec	4	Spic	W	Timk	144	Per	36x4	36x7	Ross	Simp	..
Gramm-Bernstein	4490	2750	Wau	4	3¾x5¼	22.5	4	¼	L	C	T	Sp	Zen	Eism	....	D	Selec	3	Arv	W	....	146	....	34x4	34x3½D	Ross	Wau	70
Grant 15	3400	2150	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Dix	Remy	B	GLee	3	Arv	I	Torb	124	Per	34x4	34x6	Jac	Pier	65
Grant 16	3450	2250	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Dix	Remy	B	GLee	3	Arv	I	Torb	140	Per	34x4	34x6	Jac	Pier	65
Hahn H	4800	1950	Cont	4	4⅛x5¼	30	3	3/16	L	P	Own	Fo	Strm	Mag	....	D	B-Li	3	Spic	I	Torb	136	Del	34x3½	34x6	Ross	Pier	65
Hahn E	5000	2500	Cont	4	4½x5½	40	4	¼	L	C	Own	Fo	Strm	Bosh	....	D	B-Li	3	Spic	W	Timk	Opt	Del	36x4	36x7	Ross	Pier	..
Hurlburt	5600	3500	Buda	4	4¼x5½	28.9	3	¼	..	C	T	FS	Flch	Eism	....	D	B-Li	3	Spic	W	Flot	148	....	36x4	36x4D	Ross	Dup	..

Mack 2-ton Model, Chassis, $3000.
International Motor Co., New York City.



Selden JWB, 2-ton Model, Chassis, $3050.
Selden Motor Vehicle Co., Rochester, N. Y.

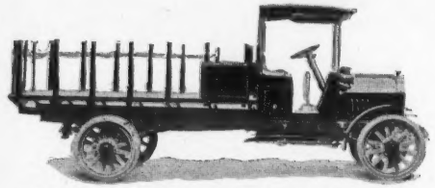
Pierce-Arrow 2-ton Model, Chassis, $3750.
Pierce-Arrow Motor Car Co., Buffalo, N. Y.

Stewart 7, 2-ton Model, Chassis, $2575.
Stewart Motor Corp., Buffalo, N. Y.

Schacht 2-ton Model, Chassis, $3150.
G. A. Schacht Motor Truck Co., Cincinnati, O.

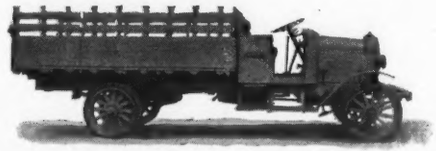
Vim 22, 2-ton Model, Chassis, $3150.
Vim Motor Truck Co., Philadelphia, Pa.

Netco D, 2-ton Model, Chassis, $3000.
New England Truck Co., Fitchburg, Mass.

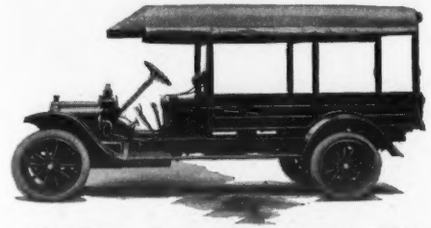


Sullivan E, 2-ton Model, Chassis, $2850.
Sullivan Motor Truck Corp., Rochester, N. Y.

Witt-Will W. D. 2-ton Model, Chassis, $2850.
Witt-Will Co., Inc., Washington, D. C.



Ward La France, 2-ton Model, Chassis, $3500.
Ward La France Truck Co., Inc., Elmira, N. Y.

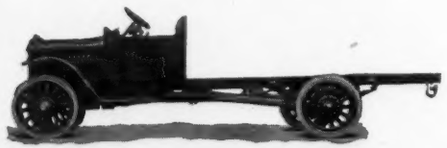


White TNC, 2-ton Model, Chassis, $3300.
The White Co., Cleveland, Ohio.

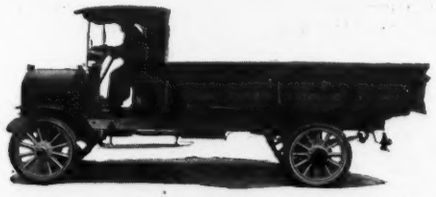
2 Ton Gasoline Commercial Cars

Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
g. c.																												
Mack	5000	3000	Own	4	4x5	25.6	3	..	L	C	H	FS	Strm	Dix	....	D	Selec	4	....	Op	Opt	Opt	....	36x4	36x3½D	....	Own	..
Netco D	5900	3000	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	Sp	Zen	Eism	....	L	B-Li	3	Hart	W	Timk	144	Per	36x4	36x6	Ross	....	75
Pierce-Arrow	6250	3750	Own	4	4x5½	25.6	4	1/16	T	C	T	Fo	Own	Eism	....	C	Selec	3	....	W	Flot	150	S-El	36x4	36x4D	....	Own	85
Rowe CDW	4500	3000	Wis	4	4x5	32	4	¼	L	C	May	Fo	Zen	Bosh	....	L	B-Li	4	Arv	W	Timk	142	Shel	34x4	36x4D	Ross	Simp	53
Royal	....	3200	Wis	4	4x6	25.6	.	..	..	C	T	...	Strm	Bosh	Opt	B	Own	.	Own	W	Timk	...	Mer	36x4½	36x6	Ross	Mon	..
Schacht	5500	3150	Buda	4	4¼x5½	28.9	3	¼	L	P	Own	Fo	Sheb	Bosh	....	H	Own	3	Hart	W	Own	Opt	Nat	36x4	36x7	Own	Dup	70
Selden JWB	5000	3050	Cont	4	4⅛x5¼	27.2	3	3/16	L	P	Bus	Sp	Strm	Bosh	....	L	B-Li	4	Spic	W	Timk	150	Per	36x4	36x7	Jac	Pier	70
Sedlen JCB	4820	2850	Cont	4	4⅛x5¼	27.2	3	3/16	L	P	Bus	Sp	Strm	Bosh	....	L	B-Li	4	Spic	I	Russ	150	Per	36x4	36x7	Jac	Pier	70
Stewart	4460	2575	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	FS	Zen	Berl	....	D	Full	3	Hart	Sp	Cl	156	Det	34x4	34x4D	Ross	Pier	80
Sullivan E	4500	2850	Buda	4	4⅛x5½	27.2	3	¼	L	P	V	Fo	Strm	Bosh	....	L	B-Li	3	Bld	W	Timk	150	Shel	36x4	36x6	Ross	....	71
Vim 22	4700	3150	Her	4	3¾x5⅛	22.5	4	3/16	L	C	T	FS	Zen	Dix	....	D	B-Li	4	Spic	W	Shel	142	Shel	36x4	36x6	Gem	Dup	..
Ward La France	5250	3500	.....	4	4⅛x5¼	27.2	3	..	L	G	T	Sp	Zen	Bat	Dyn	B	Selec	4	Hart	W	Timk	154	....	36x4	36x7	....	Simp	..
White TBC	4150	3300	Own	4	3¾x5½	22.5	3	..	L	C	C	FS	Own	Mag	....	D	Selec	4	Own	B	½Fl	145½	....	36x4	36x4D	Own	....	..
Witt-Will	4550	2850	Cont	4	4½x5¼	27.2	3	1/16	L	G	C	FS	Zen	Eism	....	D	Selec	3	....	W	Timk	144	....	36x3½	36x7	....	Pier	67

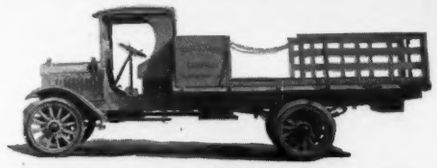
Ward La France	5250	3500	.....	4	4½x5¼	27.2	3	..	L	L	C	T	FS	Zen	Dix	....	D	B-Li	4	Spic	W	Shel	142	Shel	36x4	36x6	Ross	....	71
White TBC	4150	3300	Own	4	3¾x5½	22.5	3	..	L	L	G	C	Sp	Zen	Bat	Dyn	B	Selec	4	Hart	W	Timk	154	....	36x4	36x7	Gem	Dup	..
Witt-Will	4550	2850	Cont	4	4⅛x5¼	27.2	3	..	L	L	G	C	FS	Own	Mag	....	D	Selec	4	Own	B	½Fl	145½	....	36x4	36x4D	Own	....	..
													FS	Zen	Elsm	....	D	Selec	3	....	W	Timk	144	....	36x3½	36x7	....	Pier	67



Bethlehem 2½-ton Chassis, $2363.
Bethlehem Motors Corp., Allentown, Pa.



Brinton F, 2½-ton Model, Chassis, $3000.
Brinton Motor Truck Co., Philadelphia, Pa.

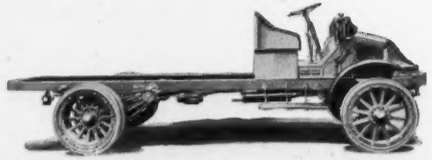


Concord B, 2½-ton Model, Chassis, $2850.
Abbott-Downing Truck & Body Co., Concord, N. H.

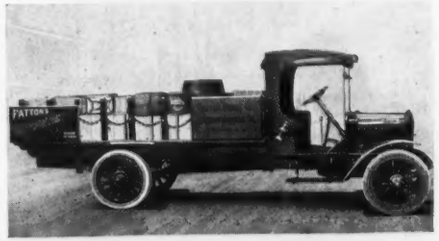
Corbitt B, 2½-ton Model, Chassis, $3200.
Corbitt Motor Truck Co., Henderson, N. C.

Day-Elder D, 2½-ton Model, Chassis, $2450.
Day-Elder Motors Corp., Newark, N. J.

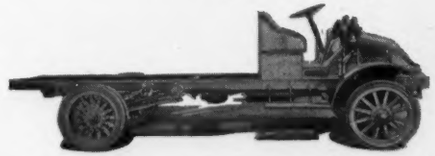
Gramm-Bernstein 2½-ton Model, $3350.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.



Kelly-Springfield K35, 2½-ton Chain Drive, Chassis, $3250.
Kelly-Springfield Motor Tr. Co., Springfield, O.



Koehler L, 2½-ton Model, Chassis, $1985.
H. J. Koehler Motors Corp., Newark, N. J.

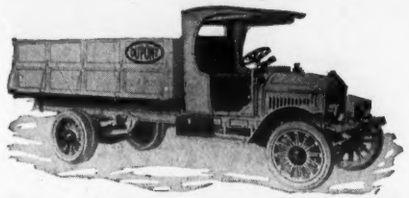


Kelly-Springfield K-36, 2½-ton Worm Drive, Chassis, $3250.
Kelly-Springfield Motor Tr. Co., Springfield, O.

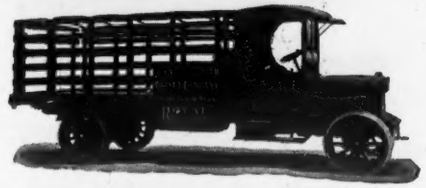
2½ Ton Gasoline Commercial Cars

Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Bethlehem E	3950	2365	Own	4	4x4½	25.6	3	¼	L	T	Fed	FS	Sheb	Will	G&D	B	Det	3	UP	I	Russ	144	Shel	34x4	34x6	Lav	Mon	85
Brinton F	4600	3000	Cont	4	4¼x5¼	27.2	3	¼	L	T	T	Fo	Strm	Bosh	....	D	Selec	3	....	W	Flot	140	....	36x4	36x6	....	....	..
Concord B	4500	2850	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Zen	Eism	....	L	B-Li	3	Spic	W	Timk	150	Per	36x4	36x4D	Ross	Mon	70
Corbitt B	5000	3200	Cont	4	4½x5¼	27.2	3	¼	L	C	T	FS	Strm	Eism	G&D	L	B-Li	4	....	W	Shel	148	Shel	36x4	36x7	Ross	Pier	75
Day-Elder	3400	2150	Cont	4	3¾x5	22.5	3	¼	L	T	Bus	FS	Zen	Berl	....	B	Covt	3	Hart	W	Wis	128	IC	34x4	34x6	Ross	Mon	..
Gramm-Bernstein	5210	3350	Wau	4	4¼x5¾	28.9	3	¼	L	C	T	Sp	Zen	Eism	....	D	Selec	3	Arv	W	Shel	156	....	36x4	36x4D	Ross	Wau	70
Kelly-Spfd. K35	5200	3250	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	....	C	Covt	3	Spic	W	½Fl	144	Per	36x4	36x4D	Gem	Own	89
Kelly-Spfd. K36	5540	3250	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	....	C	Covt	3	Spic	W	½Fl	144	Per	36x4	36x4D	Gem	Own	89
Koehler L	3900	1985	Own	4	3½x5	19.6	3	⅛	L	T	V	FS	Strm	Eism	....	MM	MM	3	K-B	I	Torb	152	....	34x4	34x6	Own	Mon	65

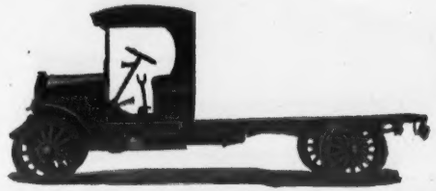
Rowe C. D. W., 2½-ton Chassis, $3250.
Rowe Motor Mfg. Co., Lancaster, Pa.



Maccar H, 2½-ton Model, Chassis, $3300.
Maccar Truck Co., Scranton, Pa.



Netco H, 2½-ton Model, Chassis, $3200.
New England Truck Co., Fitchburg, Mass.



Sanford W 25, 2½-ton Truck, Chassis, $3000.
Sanford Motor Truck Co., Syracuse, N. Y.

Larrabee O-P, 2½-ton Model, Chassis, $3000.
Larrabee-Deyo Motor T. Co., Binghamton, N. Y.

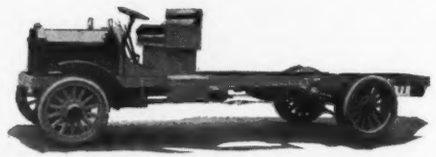
Schacht 2½-ton Model, Chassis, $3500.
G. A. Schacht Motor Truck Co., Cincinnati, O.

Tiffin MW, 2½-ton Model, Chassis, $2850.
Tiffin Wagon Co., Tiffin, Ohio.

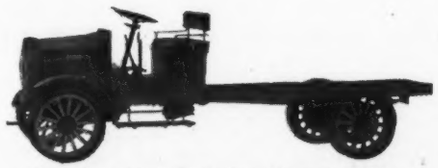
U. S. H., 2½-ton Model, Chassis, $3250.
United States Motor Truck Co., Cincinnati, Ohio.

2½ Ton Gasoline Commercial Cars

Model a. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Larrabee-Deyo	4600	3000	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	Bus	Sp	Sheb	Bosh	....	F	Full	3	UM	W	Shel	154	Mer	36x4	36x7	Lav	Pier	..
Maccar H	5000	3300	Cont	4	4½x5½	32.4	3	1/16	L	C	Own	...	Strm	Bosh	....	L	B-Li	3	Spic	..	Timk	162	Mer	36x4	36x4D	Ross	....	..
Netco H	6500	3200	Cont	4	4½x5½	32.4	3	1/16	L	C	RT	Sp	Zen	Eism	....	L	B-Li	4	Hart	W	Timk	170	Per	36x4	36x7	Ross	....	75
Rowe CDW	4600	3250	Wis	4	4x5	25.6	4	¼	L	C	May	Fo	Zel.	Bosh	....	L	B-Li	4	Arv	W	Timk	164	Shel	34x4	36x4D	Ross	Simp	61
Royal	....	3500	Wis	4	4¼x6	29	.	...	..	C	T	...	Strm	Bosh	Opt	B	Own	.	Own	W	Timk	132½	Mer	36x4½	36x6	Ross	Mon	..
Sanford 25	5400	3000	Cont	4	4⅛x4½	27.2	3	¼	L	C	McC	Fo	Strm	Bosh	....	B	B-Li	3	Opt	W	Shel	Opt	Shel	36x4	36x4D	Ross	Pier	75
Schacht	6000	3500	Buda	4	4¼x5½	28.9	3	¼	L	P	Own	Fo	Sheb	Bosh	....	H	Selec	3	Hart	W	Own	156	Nat	36x4	36x4D	Own	Dup	70
Schwartz	4000	2675	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	Fed	FS	Strm	Bosh	....	L	B-Li	3	Hart	I	Torb	146	....	36x4	36x7	Ross	Pier	..
Tiffin MW	4890	2850	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	T	FS	Rayf	Bosh	....	D	Covt	3	Acme	W	Timk	148	Kal	36x4	36x3½D	Ross	Pier	80
U. S. H	5200	3250	Cont	4	4⅛x5¼	27.2	3	3/16	L	C	T	Sp	Strm	Eism	....	H	B-Li	4	Opt	W	Shel	144	Shel	34x4	36x4D	Lav	Pier	80



Peerless 3-ton Chassis, $4125.
Peerless Motor Car Co., Cleveland, Ohio.



Rennoc Model M, 3-ton Chassis, $2895.
Rennoc-Leslie Motor Co., Philadelphia, Pa.

White TJ, 3-ton Model, Chassis, $4100.
The White Co., Cleveland, Ohio.

Vim 23, 3-ton Model, Chassis, $3950.
Vim Motor Truck Co., Philadelphia, Pa.

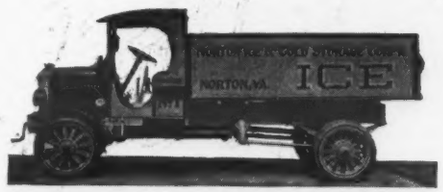
The White Co., Cleveland, Ohio.

Vim 23, 3-ton Model, Chassis, $3950.
Vim Motor Truck Co., Philadelphia, Pa.

3 Ton Gasoline Commercial Cars

Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Peerless TC	6900	4125	Own	4	4½x6½	32.4	3	1/8	T	G	T	Sp	Strm	Remy	....	C	Selec	4	Own	C	Dead	151	....	36x5	40x5	Own	Own	92
Rennoc M	5050	2895	Buda	4	4½x5½	27.2	3	¼	L	C	T	Fo	Strm	Spld	....	W	Warn	4	Har	W	Wis	144	Row	36x5	36x7	Lav	Pier	65
Riker B	6900	4600	Own	4	4¼x6	28.9	5	¼	T	C	T	FS	Own	Berl	West	O	Selec	4	Own	W	Own	150	Opt	36x5	36x5D	Ross	Own	75
Rowe GW	5500	4500	H-Sp	8	3¼x5	....	3	1/8	L	May	Fo	Zen	At-K	....	L	B-Li	4	M	W	Shel	170	Shel	38x7*	42x9*	Ross	....	55
Vim 23	6000	3950	Own	4	4¼x5½	28.9	5	1/16	L	C	T	FS	Zen	Dix	....	D	B-Li	4	Spic	W	Shel	175	Shel	36x4	36x4D	Gem	Dup	..
White TJ	....	4100	Own	4	3¾x5¾	22.5	.	..	L	C	T	Fo	Own	Mag	....	D	Selec	4	Own	DR	Flot	171½	....	36x5	40x5D	....	....	..

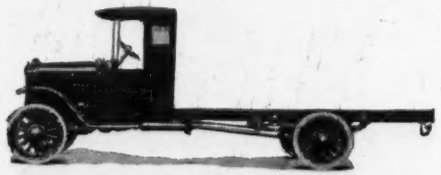
Rowe GW, 3-ton Chassis, $4500.
Rowe Motor Mfg. Co., Lancaster, Pa.



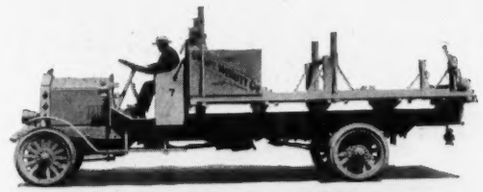
Armleder KW, 3½-ton Model, Chassis, $3850.
O. Armleder Co., Cincinnati, Ohio.

Atterbury 7D, 3½-ton Model, Chassis, $3875.
Atterbury Motor Car Co., Buffalo, N. Y.

Bessemer K, 3½-ton Model, Chassis, $3450.
Bessemer Motor Truck Co., Grove City, Pa.



Bethlehem, 3½-ton Chassis, $3465.
Bethlehem Motors Corp., Allentown, Pa.

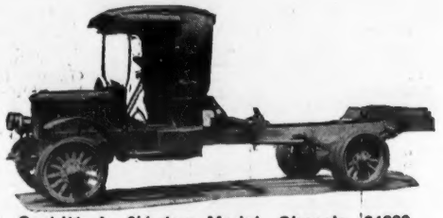


Clydesdale 90, 3½-ton Model.
Clyde Cars Co., Clyde, Ohio.

Brockway R, 3½-ton Model, Chassis, $3750.
Brockway Motor Truck Co., Cortland, N. Y.

3½ Ton Gasoline Commercial Cars

Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Armleder KW	6600	3850	Cont	4	4½x5½	32.4	3	1/8	L	C	T	Fo	Sheb	Bosh	....	D	B-Li	3	Opt	W	Timk	156	Math	36x5	36x5D	Ross	Pier	60
Atterbury 7D	6910	3875	Cont	4	4½x5½	32.4	3	¼	L	C	T	Sp	Zen	Eism	....	L	B-Li	4	Spic	W	Timk	167	SP	36x5	40x5D	Gem	Pier	92
Bessemer K	....	3450	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Rayf	Dix	....	B	B-Li	4	....	I	Torb	175	Per	36x5	36x5D	Ross	Pier	..
Bethlehem F	4983	3465	Own	4	4⅜x6	30.6	4	¼	L	T	Fed	FS	Sheb	Will	G&D	B	Det	3	UP	I	Russ	162	Shel	34x4	34x5D	Lav	Mon	85
Brockway R	6800	3750	Cont	4	4½x5½	32.4	3	1/8	L	C	Bus	FS	Sheb	Eism	....	L	B-Li	3	Spic	W	Timk	Opt	Mer	36x5	36x5D	Gem	Opt	70
Clydesdale	6600	....	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Sp	Zen	Bosh	....	L	B-Li	4	Spic	W	Timk	170	Stan	36x5	40x5D	Ross	Own	78



Corbitt A, 3½-ton Model, Chassis, $4000.
Corbitt Motor Truck Co., Henderson, N. C.

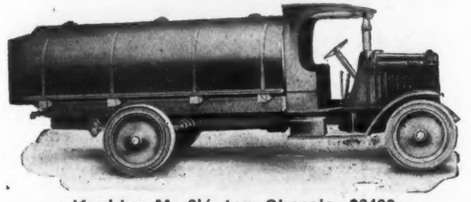
Gramm-Bernstein 3½-ton Model, $4000.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.

Kelly-Springfield K-40, 3½-ton Chain Drive, Chassis, $4250.
Kelly-Springfield Motor Truck Co., Springfield, Ohio.

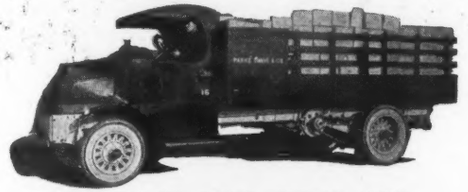
Maccar M, 3½-ton Model, Chassis, $4100.
Maccar Truck Co., Scranton, Pa.

Day-Elder C, 3½-ton Platform, Chassis, $2750.
Day-Elder Motors Corp., Newark, N. J.

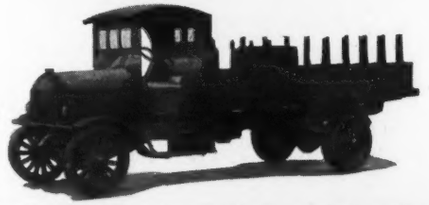
Hahn F, 3½-ton Model, Chassis, $3250.
Hahn Motor Truck & Wagon Co., Hamburg, Pa.



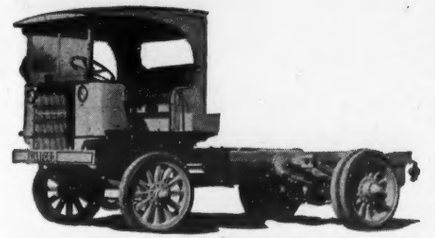
Koehler M, 3½-ton Chassis, $3400.
H. J. Koehler Motors Corp., Newark, N. J.



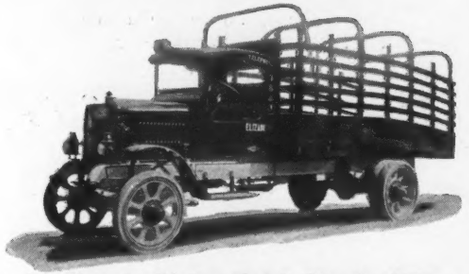
Mack 3½-ton Model, Chassis, $4600.
International Motor Co., New York City.



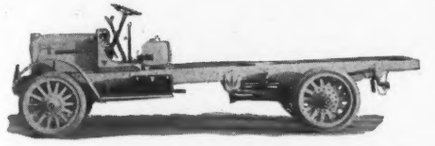
Sanford W 35, 3½-ton Truck, Chassis, $3975.
Sanford Motor Truck Co., Syracuse, N. Y.



Garford 77B, 3½-ton Model, Chassis, $4300.
Garford Motor Truck Co., Lima, Ohio.



Larrabee A, 3½-ton Model, Chassis, $3950.
Larrabee-Deyo Motor T. Co., Binghamton, N. Y.



Hurlburt 3½-ton Model, Chassis, $4250.
Hurlburt Motor Truck Co., New York City.

Schacht 3½-ton Model, Chassis, $3950.
G. A. Schacht Motor Truck Co., Cincinnati, O.

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

Maccar Truck Co., Scranton, Pa.

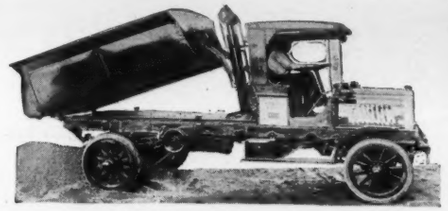
Sanford W 35, 3½-ton Truck, Chassis, $3975.
Sanford Motor Truck Co., Syracuse, N. Y.

Schacht 3½-ton Model, Chassis, $3950.
G. A. Schacht Motor Truck Co., Cincinnati, O.

Selden NL, 3½-ton Model, Chassis, $3850.
Selden Motor Vehicle Co., Rochester, N. Y.

Rowe DEW, 3½-ton Model, Chassis, $3800.
Rowe Motor Mfg. Co., Lancaster, Pa.

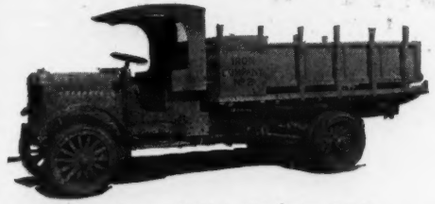
Tiffin PW, 3½-ton Model, Chassis, $3760.
Tiffin Wagon Co., Tiffin, Ohio.



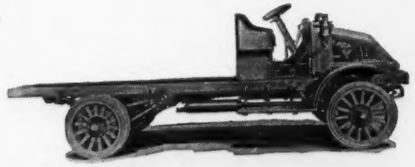
U. S. D., 3½-ton Model, Chassis, $3500.
United States Motor Truck Co., Cincinnati, O.

3½ Ton Gasoline Commercial Cars

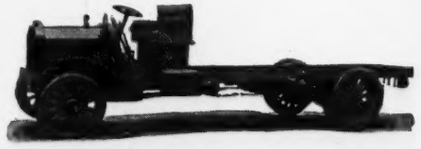
Model a. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Corbitt A	6780	4000	Cont	4	4⅛x5½	32.4	3	1/16	L	C	T	Sp	Strm	Eism	G&D	M	Cott	3	....	W	Shel	168	Shel	36x5	36x10	Ross	Pier	80
Day-Elder C	4600	2750	Buda	4	4¼x5½	28.9	3	¼	L	C	Bus	FS	Zen	Berl	....	B	Covt	3	Hart	W	Wis	150	IC	36x4	36x7	Ross	Mon	..
Garford 77B	7235	4300	Wis	4	4¼x6	28.9	3	¼	L	C	T	Sp	Rayf	Eism	....	L	Selec	4	Spic	W	Timk	128	Per	36x5	40x5D	Ross	Simp	..
Gramm-Bernstein	6790	4000	Wau	4	4½x5¾	32.4	3	¼	L	C	T	Sp	Zen	Eism	....	D	Selec	4	Own	W	Shel	158	....	36x5	40x5D	Ross	Wau	70
Hahn F	7000	3250	Cont	4	4½x5½	32.4	4	¼	L	C	Own	Fo	Strm	Bosh	....	D	B-Li	4	Spic	W	Timk	Opt	Del	36x5	36x5D	Ross	Pier	..
Hurlburt	6400	4250	Buda	4	4½x6	32.4	3	¼	L	C	T	FS	Flch	Eism	....	D	B-Li	3	Spic	W	Flot	146	....	36x5	36x5D	Ross	Dup	..
Kelly-Spfd. K-40	8285	4250	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	....	C	Covt	3	Own	C	Dead	150	Per	36x5	40x5D	Gem	Own	93
Koehler M	4200	3400	.....	4	3¾x5¼	22.5	3	¼	L	G	T	Sp	Strm	Eism	....	D	MM	3	K-B	I	Torb	162	....	36x5	36x5D	Own	Mon	65
Larrabee-Deyo	6000	3950	Cont	4	4½x5½	32.4	3	1/16	L	C	Bus	Sp	Strm	Bosh	....	L	B-Li	4	UM	W	Shel	172	Mer	36x5	36x5D	Ross	Pier	..
Maccar M	6175	4100	Cont	4	4½x5½	32.4	3	1/16	L	C	Own	...	Strm	Bosh	....	L	B-Li	3	Spic	..	Timk	Opt	Mer	36x5	36x5D	Ross	....	..
Mack	9970	4600	Own	4	5x6	40	2	..	L	C	T	FS	Strm	Dix	....	D	Selec	3	....	C	Dead	Opt	....	36x5	40x5D	....	Own	..
Royal	....	4200	Wis	4	4¼x6	28.9	3	¼	L	C	T	...	Strm	Bosh	Opt	B	Own	.	Own	W	Timk	158	Mer	36x5	38x5D	Ross	Mon	..
Rowe DEW	6520	3800	Wis	4	4x6	25.6	4	¼	L	C	May	Fo	Zen	Bosh	....	L	B-Li	4	M	W	Shel	156	Shel	36x5	36x5D	Ross	Simp	54
Sanford 35	6900	3975	Cont	4	5¼x5½	34.4	3	¼	L	C	McC	Fo	Strm	Bosh	....	B	B-Li	3	Opt	W	Shel	174	Shel	36x5	36x5D	Ross	Pier	75
Schacht	6500	3950	Buda	4	4¼x5½	28.9	3	¼	L	P	Own	Fo	Sheb	Bosh	....	H	Own	3	Hart	W	Flot	168	Nat	36x5	36x5D	....	Dup	70
Selden NL	6550	3850	Cont	4	4½x5½	32.4	3	1/16	L	P	Bus	Sp	Strm	Eism	....	L	B-Li	4	Spic	W	Timk	164	Per	36x5	36x5D	Ross	Pier	70
Tiffin PW	6850	3760	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Sp	Zen	Bat	Dyn	B	Covt	3	Acme	W	Shel	160	Kal	36x5	36x5D	Ross	Pier	80
U. S. D	7000	3950	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Sp	Strm	Eism	....	H	B-Li	4	Opt	W	Shel	Opt	Shel	36x5	40x5D	Lav	Pier	80



Riker 4-ton Model, Chassis, $4700.
Locomobile Co. of America, Bridgeport, Conn.



Kelly-Springfield K-45, 4-ton Chassis, $4400.
Kelly-Springfield Motor Tr. Co., Springfield, O.

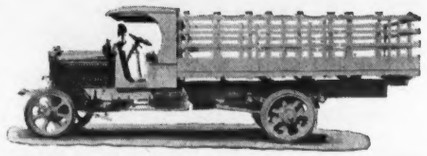


Peerless 4-ton Chassis, $4150.
Peerless Motor Car Co., Cleveland, Ohio.

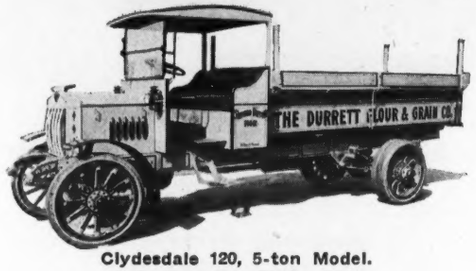
Gabriel F, 4-ton Model, Chassis, $4300.
Gabriel Motor Truck Co., Cleveland, Ohio.

4 Ton Gasoline Commercial Cars

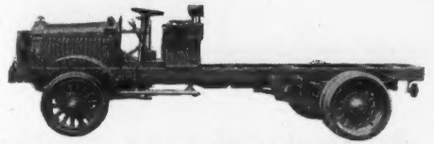
Model a. c.	Chassis Weight	Chassis Price	Engine	No. of Cylindrs	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Gabriel F	....	4300	Buda	4	4¼x5½	28.9	3	1/16	L	C	T	Fo	Rayf	Bosh	L-N	B	B-Li	4	Spic	W	Timk	180	Mer	36x5	40x5D	Gem	Dup	65
Kelly-Spfd.	8730	4400	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	....	C	Covt	3	Own	C	Dead	150	Per	36x5	40x6D	Gem	Own	93
Peerless	7100	4150	Own	4	4½x6½	32.4	3	1/16	T	G	T	Sp	Strm	Remy	....	C	Selec	4	Own	C	Dead	161	....	36x5	40x5	Own	Own	92
Riker	7200	4700	Own	4	4¼x6	28.9	5	¼	T	C	T	FS	B&B	Berl	West	C	Selec	4	Own	W	Own	Opt	Opt	36x5	36x6D	Ross	Own	77



Atterbury 8 E, 5-ton Model, Chassis, $4975.
Atterbury Motor Car Co., Buffalo, N. Y.

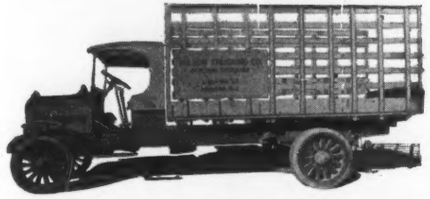


Clydesdale 120, 5-ton Model.
Clyde Cars Co., Clyde, Ohio.

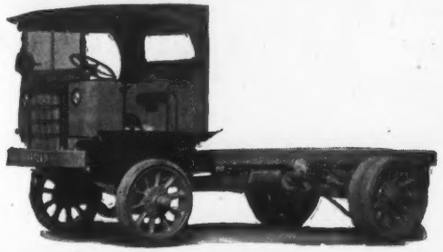


Brockway T, 5-ton Model, Chassis, $4850.
Brockway Motor Truck Co., Cortland, N. Y.

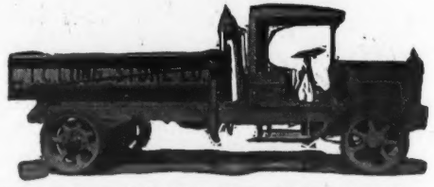
Corbitt AA, 5-ton Model, Chassis, $4500.
Corbitt Motor Truck Co., Henderson, N. C.



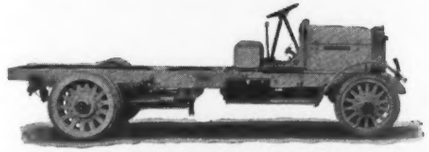
Day-Elder E, 5-ton Model, Chassis, $4500.
Day-Elder Motors Corp., Newark, N. J.



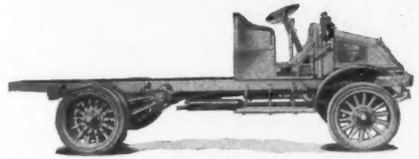
Garford 68 or 69, 5 or 6-ton Model, $5000, $5300.
Garford Motor Truck Co., Lima, Ohio.



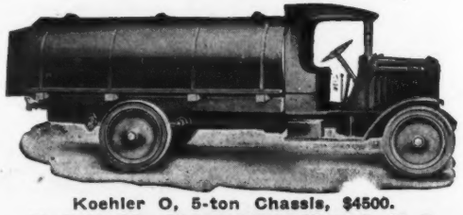
Gramm-Bernstein W5, 5-ton Model, Chassis, $5000.
Gramm-Bernstein Motor Truck Co., Lima, O.



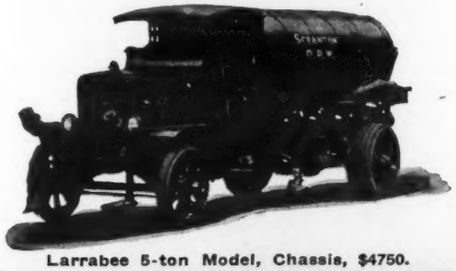
Hurlburt 5-ton Model, Chassis, $5250.
Hurlburt Motor Truck Co., New York City.



Kelly-Springfield K-50, 5-ton Chassis, $4900.
Kelly-Springfield Motor Tr. Co., Springfield, O.



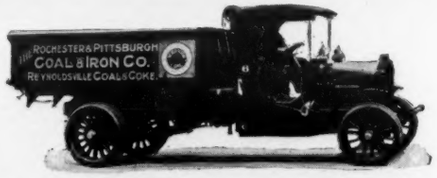
Koehler O, 5-ton Chassis, $4500.
H. J. Koehler Motors Corp., Newark, N. J.



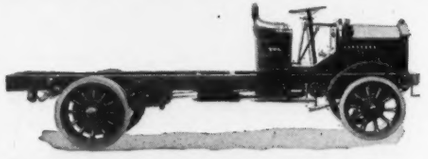
Larrabee 5-ton Model, Chassis, $4750.
Larrabee-Deyo Motor T. Co., Binghamton, N. Y.

Peerless 5-ton Chassis, $4700.
Peerless Motor Car Co., Cleveland, Ohio.

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

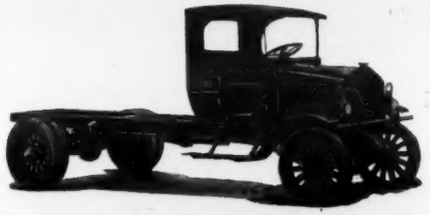


Pierce-Arrow 5-ton Model, Chassis, $5500.
Pierce-Arrow Motor Car Co., Buffalo, N. Y.

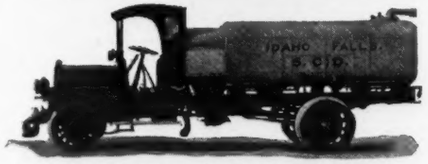


Selden DL, 5-ton Model, Chassis, $5000.
Selden Motor Vehicle Co., Rochester, N. Y.

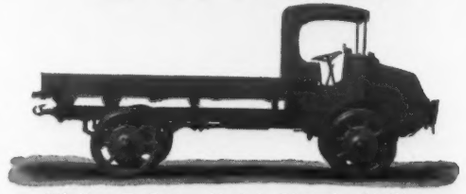
Vim 24, 5-ton Model, Chassis.
Vim Motor Truck Co., Philadelphia, Pa.



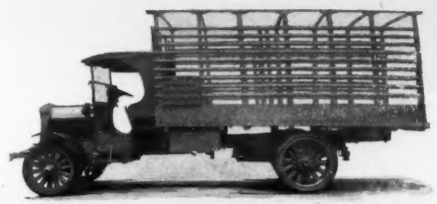
Sanford W 50, 5-ton Model, Chassis, $4750.
Sanford Motor Truck Co., Syracuse, N. Y.



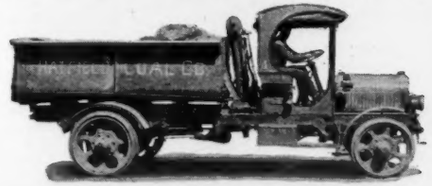
Tiffin RW, 5-ton Model, Chassis, $5000.
Tiffin Wagon Co., Tiffin, Ohio.



Walter F, 5-ton Model, Chassis, $5500.
Walter Motor Truck Co., New York City.



Schacht 5-ton Model, Chassis, $4950.
G. A. Schacht Motor Truck Co., Cincinnati, O.



U. S. K, 5-ton Model, Chassis, $4850.
United States Motor Truck Co., Cincinnati, O

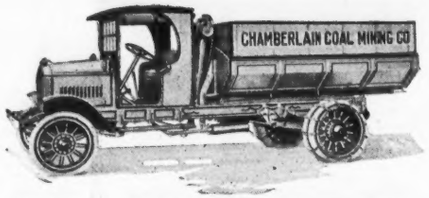
White TG, 5-ton Model, Chassis, $5000.
The White Co., Cleveland, Ohio.

5 Ton Gasoline Commercial Cars

Model g. c.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
Atterbury	9635	4975	Cont	4	4¾x6	36.1	3	¼	L	C	T	Fo	Zen	Eism	....	L	B-Li	4	Spic	W	Timk	167	SP	36x5	40x6D	Gem	Cont	84
Brockway T	8000	4850	Cont	4	4¾x6	36.1	3	¼	L	C	Bus	Fo	Sheb	Eism	....	L	B-Li	4	Spic	W	Timk	172	Mer	36x6	36x6D	Gem	Dup	..
Clydesdale	8500	....	Cont	4	4¾x6	36.1	3	¼	L	C	T	Fo	Zen	Bosh	....	L	B-Li	4	Spic	W	Timk	Opt	Per	36x5	40x6D	Ross	Own	76
Corbitt AA	8900	4500	Cont	4	4½x5½	32.4	3	5/16	L	C	T	FS	Strm	Eism	G&D	M	Cott	3	....	W	Shel	168	Shel	36x6	36x6D	Ross	Pier	75
Day-Elder	10000	4500	Buda	4	4½x6	32.4	3	¼	L	C	Bus	Fo	Zen	Eism	....	L	B-Li	4	Hart	W	Shel	170	Shel	36x5	40x6D	Ross	Mon	..
Garford	8870	5000	Wis	4	4¾x5½	36.1	3	¼	T	C	T	Sp	Rayf	Eism	....	L	Selec	4	Spic	C	Dead	128	Per	36x6	40x6D	Ross	Simp	..
Gramm-Bernstein	8700	5000	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	Zen	Eism	....	C	Selec	4	Own	W	Shel	168	....	36x6	40x6D	Ross	Wau	70
Hurlburt	7800	5250	Buda	4	4½x6	32.4	3	¼	L	C	T	FS	Fich	Eism	....	D	B-Li	3	Spic	W	Flot	156	....	36x5	40x6D	Ross	Dup	..
Kelly-Spfd.	9175	4900	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	....	C	Covt	3	Own	C	Dead	150	Per	36x6	40x6D	Gem	Own	93
Koehler	5000	4200	.....	4	4¼x5½	28.9	3	¼	L	G	T	Sp	Strm	Eism	....	D	MM	4	K-B	I	Torb	170	....	36x6	36x6D	Own	Mon	65
Larrabee-Deyo	7900	4750	Cont	4	4½x5½	32.4	3	5/16	L	C	Bus	Sp	Strm	Bosh	....	L	B-Li	4	M	W	Shel	176	Mer	36x5	40x6D	Ross	Pier	..
Peerless	8050	4700	Own	4	4½x6½	32.4	3	5/16	T	G	T	Sp	Strm	Remy	....	C	Selec	4	Own	C	Dead	161	....	36x6	40x6	Own	Own	92
Pierce-Arrow	7225	5500	Own	4	4⅞x6	38	4	¼	T	P	T	Sp	Own	Bosh	....	C	Selec	3	Opt	C	Shel	156	S-El	....	40x6	....	Own	85
Rowe FW	8350	4900	Wis	4	4¾x5½	36.1	4	¼	T	C	May	Fo	Zen	Bosh	....	L	B-Li	4	M	W	Shel	171	Shel	36x6	40x6	Ross	Simp	57
Royal	....	5000	Wis	4	4¾x5½	36.1	4	¼	T	C	T	..	Strm	Bosh	Opt	..	Own	.	Own	W	Timk	168	Mer	36x6	40x6D	Ross	Mon	..
Sanford 50	7400	4750	Cont	4	5¼x5½	34.4	3	¼	L	C	McC	Fo	Strm	Bosh	....	B	B-Li	3	Opt	W	Shel	174	Shel	36x5	40x6D	Ross	Pier	75
Schacht	8000	4950	Buda	4	4¼x5½	28.9	3	¼	L	P	Own	Fo	Sheb	Bosh	....	H	Selec	3	Opt	C	Shel	156	S-El	36x5	40x6D	Own	Dup	70
Selden DL	8800	5000	Cont	4	4½x5½	32.4	3	5/16	L	P	Bus	FS	Strm	Eism	....	L	B-Li	4	Spic	W	Timk	170	Per	36x6	40x12	Ross	Pier	70
Tiffin	8400	5000	Cont	6	3¾x5¼	33.7	3	5/16	L	C	T	FS	Rayf	Bosh	West	D	Covt	3	Acme	W	Shel	168	Kal	36x6	40x6D	Ross	....	80
U. S. K	8500	4850	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	Strm	Eism	....	B	B-Li	4	Opt	W	Shel	156	Shel	36x5	40x6D	Lav	Wau	80
Vim 24	8500	....	Own	4	4¼x5½	28.9	5	5/16	L	C	T	FS	Zen	Dix	....	D	B-Li	4	Spic	W	Shel	175	Shel	36x5	40x6D	Gem	Dup	..
Walter F	7500	5500	Own	4	4½x6½	32.4	3	5/16	..	G	Own	Fo	H-N	Eism	....	D	Selec	4	Own	I	Dead	140	Mer	40x6	40x10	Own	Own	65
White TG	....	5000	Own	4	4¼x5¾	28.9	.	..	L	C	T	Fo	Own	Mag	....	D	Selec	4	Own	B	Flot	174	....	36x6	40x6D	Own	....	..

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

Mack 5½-ton Model, Chassis, $5250.
International Motor Co., New York City.



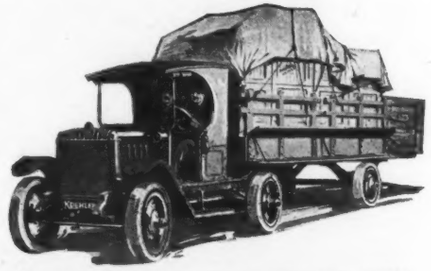
Maccar U, 5½-ton Model, Chassis, $5000.
Maccar Truck Co., Scranton, Pa.

Kelly-Springfield K-60, 6-ton Model, Chassis, $5200.
Kelly-Springfield Motor Tr. Co., Springfield, O.

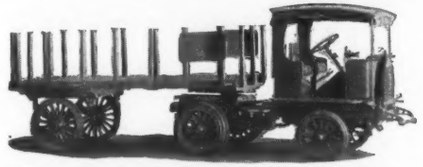
Mack 7-ton Model, Chassis, $5500.
International Motor Co., New York City.

5½, 6, 7 Ton Gasoline Commercial Cars

Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
g. c.																												
Maccar 5½	8000	5000	Wis	4	5.1x5½	41.5	3	¼	T	C	Own	...	Strm	Bosh	....	L	B-Li	4	Spic	W	Timk	186	Mer	36x5	40x6D	Ross	....	..
Mack 5½	10550	5250	Own	4	5x6	40	2	..	L	C	T	FS	Strm	Dix	....	D	Selec	3	....	C	Dead	Opt	....	36x6	40x6D	....	Own	..
Garford 6	9350	5300	Wis	4	5.1x5½	41.5	3	¼	T	C	T	Sp	Rayf	Eism	....	L	Selec	4	Spic	C	Dead	128	Per	36x6	40x7D	Ross	Simp	..
Kelly-Spfd. 6	9500	5200	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	....	C	Covt	3	Own	C	Dead	Opt	Per	36x6	40x7D	Gem	Own	93
Royal 6	....	5400	Wis	4	5⅛x6	42.2	.	..	..	C	T	...	Strm	Bosh	Opt	..	Own	.	Own	W	Timk	168	Mer	36x6	40x6D	Ross	Mon	..
Tiffin 6-ton	9000	5200	Cont	6	3¾x5¼	33.7	3	⅛	L	C	T	FS	Rayf	Bosh	West	D	Covt	3	Acme	W	Shel	168	Kal	36x6	40x12	Ross	....	80
Mack 7	10950	5500	Own	4	5x6	40	2	..	L	C	T	FS	Strm	Dix	....	D	Selec	3	....	C	Dead	Opt	....	36x7	40x7	....	Own	..
Royal 7	....	....	Wis	4	5¼x7	44.2	.	..	..	C	T	...	Strm	Bosh	Opt	..	Own	.	....	W	Timk	168	Mer	36x7	40x7D	Ross	Mon	..

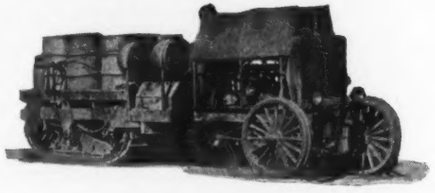


Koehler KT, 3-ton Truck Tractor, $1750.
Also 5-ton Truck Tractor, $2165.
H. J. Koehler Motors Corp., Newark, N. J.

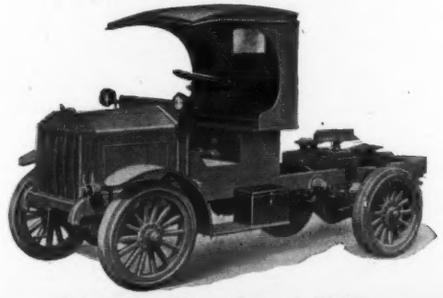


Watson 5-ton Commercial Tractor, Chassis, $4050.
Watson Wagon Co., Canastota, N. Y.

Knox 35 Truck Tractor, Chassis, $5500.
Knox Motors Co., Springfield, Mass.



Lombard Auto Tractor.
Lombard Auto Tractor-Truck Corp., N. Y. City.



Rennoc B, 8-ton Tractor, $2895.
Rennoc-Leslie Motor Co., Philadelphia, Pa.

Knox 36, 3-ton Truck Tractor, Chassis, $6000.
Knox Motors Co., Springfield, Mass.

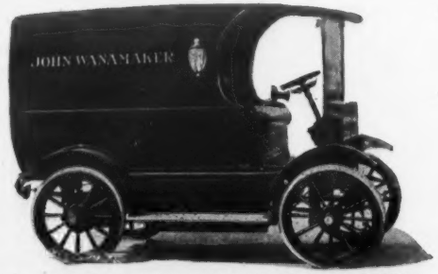
Lombard Auto Tractor-Truck Corp., N. Y. City.

Rennoc B, 8-ton Tractor, $2895.
Rennoc-Leslie Motor Co., Philadelphia, Pa.

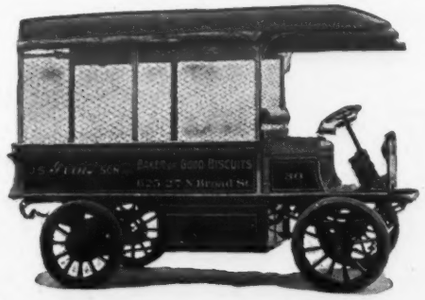
Knox 36, 3-ton Truck Tractor, Chassis, $6000.
Knox Motors Co., Springfield, Mass.

Gasoline Truck-Tractors

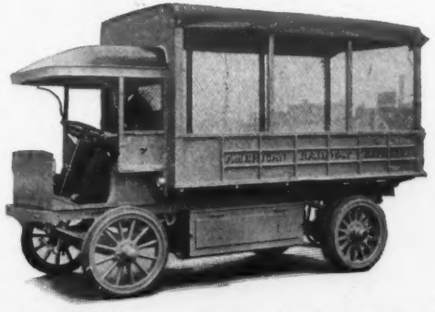
Model G. C.	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Garford 70BL	4750	3400	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Rayf	Spld	....	L	Selec	4	Spic	W	Timk	116	Per	36x4	36x7	Ross	Simp	..
Garford 77L	6990	4400	Wis	4	4¾x5½	36.1	3	¼	T	C	T	FS	Rayf	Bosh	....	C	Selec	4	Spic	W	Timk	105	Per	36x5	40x5D	Ross	Simp	..
Garford 68L	8450	5100	Wis	4	5.1x5½	41.5	3	¼	T	C	T	FS	Strm	Eism	....	MM	Selec	4	Spic	W	Timk	102	Per	36x6	40x6D	Ross	Simp	..
Koehler 3-ton	4000	1750	Own	4	3½x5	19.6	3	5/16	O	T	T	Sp	Strm	Eism	....	D	MM	3	K-B	..	Torb	106	Opt	34x3	34x5	Own	Mon	..
Koehler 5-ton	3900	2165	Own	4	3½x5	19.6	3	5/16	O	T	T	Sp	Strm	Eism	....	D	MM	3	K-B	..	Torb	106	Opt	34x4	34x6	Own	Mon	..
Knox 35	8500	5500	Own	4	5x5½	40	4	¼	O	C	Fed	Fo	Zen	Mag	....	D	Selec	3	....	C	Timk	108	....	36x4	38x6D	Ross	....	..
Knox 36 3-ton	10000	6000	Own	4	5x5½	40	4	¼	O	C	Fed	Fo	Zen	Mag	....	D	Selec	3	....	C	Timk	108	....	36x4	38x6D	Ross	....	..
Lombard	....	....	.....	6	5¾x7	79.3	.	..	..	C	..	Fo	.....	.....	....	D	....	.	....	W	....	...	....	.....	.....	. .	....	30
Rennoc 8-ton	5050	2895	Buda	4	4⅛x5½	27.2	3	¼	L	C	T	Fo	Strm	Spld	....	D	Warn	4	Hart	W	Wis	116	Row	36x5	36x7	Lav	Pier	60
Walter 5-ton	8500	5500	Own	4	4½x6½	32.4	4	¼	L	C	T	Fo	Zen	Eism	West	W	Selec	4	Own	I	Dead	140	Math	40x6	40x6D	....	Own	60
Watson	6500	4050	Cont	4	4½x5½	32.4	4	5/16	L	C	Fed	FS	Zen	Bosh	....	L	B-Li	4	Spic	W	Timk	80	Shel	34x4	36x5D	Gem	Pier	37



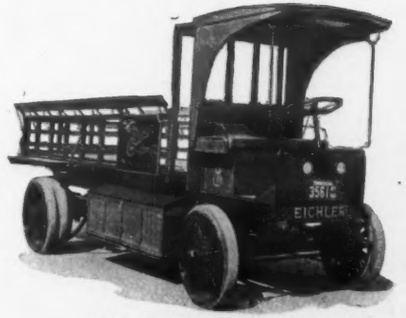
Commercial 1000-lb. Model, Chassis, $2270.
Commercial Truck Co. of America, Phila., Pa.



Commercial 1-ton Model, Chassis, $2745.
Commercial Truck Co. of America, Phila., Pa.



Commercial 2-ton Model, Chassis, $3270.
Commercial Truck Co. of America, Phila., Pa.



Atlantic 5C, 5-ton Model.
Atlantic Electric Vehicle Co., Newark, N. J.

Electric Commercial Cars

E. C. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent Weight on Rear Wheels
Ward WS	750	1400	....	12	Edis	45	West	West	4	B	Timk	Shel	32x3	32x3	Own	88	60
Commercial	1000	1800	2270	13	....	60	G-E	Own	4	Ct	Flot	....	36x3	36x3	W	90	60
Ward WA	1000	2730	....	12	Edis	47	G-E	G-E	4	W	Shel	Shel	32x3	32x4	Own	90	60
Atlantic 1C	1-ton	4530	....	12	Exid	..	G-E	G-E	4	C	Timk	S-El	34x3½	36x4	Ross	103	..
Commercial	1-ton	2500	2745	12	....	60	G-E	Own	4	Ct	Flot	....	36x3½	36x4	W	100	..
Ward WB	1-ton	3420	....	10	Edis	43	G-E	G-E	4	W	Shel	Shel	32x4	36x5	Own	102	60
Atlantic 2C	2-ton	5890	.....	11	Exid	..	G-E	G-E	4	C	Timk	S-El	34x4	36x3D	Ross	115	..
Commercial	2-ton	3500	3270	10	....	60	G-E	Own	4	Ct	Flot	....	36x4	36x4D	W	116	60
Ward WD	2-ton	4500	....	8.5	Edis	35	G-E	G-E	4	W	Shel	Shel	36x5	36x7	Own	114	60
Atlantic 3C	3½-ton	8000	.....	10	Exid	..	G-E	G-E	5	C	Timk	S-El	36x5	40x4D	Ross	124	..
Commercial	3½-ton	5000	4595	9	....	50	G-E	Own	4	I	Dead	....	36x3D	36x4D	W	122	55
Ward WF	3½-ton	6600	....	7	Edis	30	G-E	G-E	4	W	Shel	Shel	36x6	40x10	Own	132	60
Atlantic 5C	5-ton	9500	....	7	Exid	..	G-E	G-E	5	C	Timk	S-El	36x6	40x5D	Ross	144	..
Commercial	5-ton	6000	5240	7	....	50	G-E	Own	4	I	Shel	Tut	36x6	36x5D	W	132	55
Ward WH	5-ton	8375	....	6	Edis	26	G-E	G-E	4	W	Shel	Shel	36x7	40x12	Own	144	60

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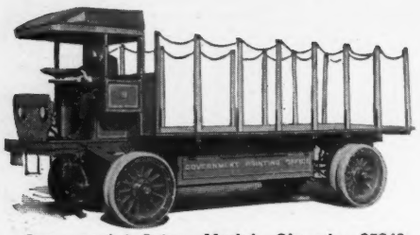
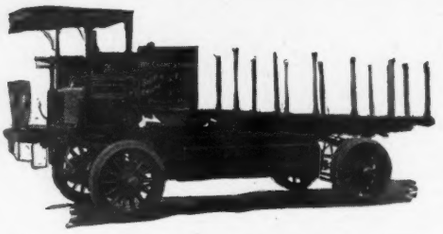
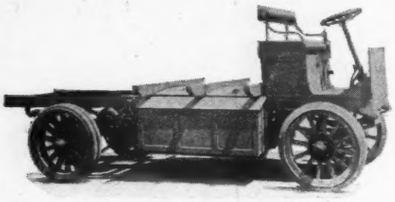


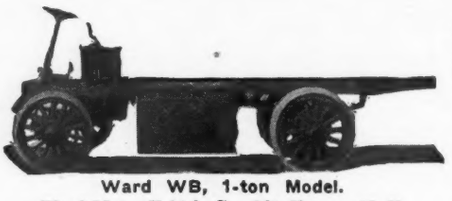
Commercial 5-ton Model, Chassis, $5240.
Commercial Truck Co. of America, Phila., Pa.



Commercial 3½-ton Model, Chassis, $4595.
Commercial Truck Co. of America, Phila., Pa.



Atlantic 2C, 2-ton Model.
Atlantic Electric Vehicle Co., Newark, N. J.



Ward WB, 1-ton Model.
Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Also 2 ton capacity, WD, and 3 ton, WH

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1000 Pound Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
945	4	14.4	Vim Motor Truck Co.	22
1250	4	18	Rainier Motor Corp.	22
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1200 Pound Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
1075	4	27.2	Willys-Overland, Inc.	22

1500 Pound Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
950	4	15.6	Stewart Motor Corp.	22
995	4	16.9	Kentucky Wagon Mfg. Co.	22
1100	4	19.6	Tiffin Wagon Co.	22
1135	4	19.6	Martin Truck & Body Corp.	22
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1225	4	20	Hahn Motor Truck & Wagon Co.	22
1350	4	16.9	Rainier Motor Corp.	22
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1 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
1125	4	16.9	Grant Motor Car Corp.	24
1375	4	19.6	Hahn Motor Truck & Wagon Co.	24
1435	4	19.6	Hoover Wagon Co.	24
1460	4	19.6	E. A. Myers Co.	24
1495	4	19.6	Bessemer Motor Truck Co.	23
1495	4	19.6	E. A. Myers Co.	24
1495	4	28	Norwalk Motor Car Co.	24
1500	4	16.9	Brinton Motor Truck Co.	23
1575	4	19.6	Stewart Motor Corp.	24
1950	4	38.9	Gabriel Motor Truck Co.	24
1950	4	30	Hahn Motor Truck & Wagon Co.	24
1950	4	22.5	Larrabee-Deyo Motor Truck Co.	24
2000	4	22.5	Corbitt Motor Truck Co.	23
2000	4	19.6	Selden Motor Vehicle Co.	24
2195	4	22.5	Vim Motor Truck Co.	24
2200	4	19.6	Selden Motor Vehicle Co.	24
2400	4	16.9	Royal Motor Truck Co. of New York	25
2400	4	25.6	International Motor Co.	24
2500	4	22.5	Garford Motor Truck Co.	24

1¼ Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
1375	4	29.6	Collier Motor Truck Co.	25
1450	4	19.6	H. J. Koehler Motors Corp.	25
1595	4	16.9	Rainier Motor Corp.	25

1½ Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
1700	4	19.6	E. A. Myers Co.	27
1750	4	19.6	Norwalk Motor Car Co.	27
1750	4	19.6	E. A. Myers Co.	27
1775	4	19.6	Day-Elder Motors Corp.	26
1795	4	22.5	Turnbull Motor Truck & Wagon Co.	26
1850	4	16.9	Fulton Motor Truck Co.	26
1885	4	22.5	Grant Motor Car Corp.	26
1890	4	19.6	Rainier Motor Corp.	27
1935	4	22.5	Grant Motor Car Corp.	26
1945	4	22.5	Bessemer Motor Truck Co.	26
1965	4	22.5	Bethlehem Motors Corp.	26
2175	4	22.5	Schwartz Motor Truck Co.	27
2150	4	22.5	Tiffin Wagon Co.	28
2175	4	22.5	Schwart Motor Truck Co.	27
2225	4	30	Hahn Motor Truck & Wagon Co.	26
2350	4	22.5	Sullivan Motor Truck Corp.	28
2400	4	22.5	White Hickory Wagon Mfg. Co.	28
2400	4	22.5	Corbitt Motor Truck Co.	26
2450	4	22.5	Gramm-Bernstein Motor Truck Co.	26
2450	4	22.5	Brockway Motor Truck Co.	26
2450	4	22.5	Abbott-Downing Truck & Body Corp.	26
2575	4	27.2	Atterbury Motor Car Co.	26
2750	4	22.5	Kelly-Springfield Motor Truck Co. (W. or C.)	26
2750	4	27.2	Maccar Truck Co.	27
2800	4	25.6	International Motor Co.	27
2800	4	22.5	Royal Motor Truck Co. of New York	27
3000	4	22.5	Garford Motor Truck Co.	26

2 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
1950	4	30	Hahn Motor Truck & Wagon Co.	29
1995	4	22.5	Turnbull Motor Truck & Wagon Co.	29
2050	2	18	Autocar Co.	28
2075	4	22.5	Day-Elder Motors Corp.	29
2150	4	22.5	Grant Motor Car Corp.	29
2250	4	22.5	Grant Motor Car Corp.	29
2490	4	27.2	Bessemer Motor Truck Co.	28
2500	4	40	Hahn Motor Truck & Wagon Co.	29
2575	4	27.2	Stewart Motor Corp.	30
2750	4	22.5	Gramm-Bernstein Motor Truck Co.	29
2850	4	27.2	Witt-Will Co., Inc.	30
2850	4	27.2	Sullivan Motor Truck Corp.	30
2850	4	27.2	Brockway Motor Truck Co.	28
2850	4	27.2	Selden Motor Vehicle Co.	30
2900	4	27	O. Armleder Co.	28
2975	4	27.2	Atterbury Motor Car Co.	28
3000	4	25.6	International Motor Co.	30
3000	4	25.6	Rowe Motor Mfg. Co.	30
3000	4	27.2	Corbitt Motor Truck Co.	29
3050	4	27.2	Selden Motor Vehicle Co.	30
3150	4	28.9	G. A. Schacht Motor Truck Co.	30
3150	4	22.5	Vim Motor Truck Co.	30
3200	4	25.6	Royal Motor Truck Co. of New York	30
3250	4	28.9	Gabriel Motor Truck Co.	29
3300	4	28.9	Garford Motor Truck Co.	29
3300	4	22.5	White Co.	30
3550	4	25.6	Pierce-Arrow Motor Car Co.	30
3500	4	28.9	Hurlburt Motor Truck Co.	29
3500	4	27.2	Ward La France Truck Co., Inc.	30

2½ Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
1985	4	19.6	H. J. Koehler Motors Corp.	31
2150	4	22.5	Day-Elder Motors Corp.	31
2365	4	25.6	Bethlehem Motors Corp.	31
2675	4	27.2	Schwartz Motor Truck Co.	32
2850	4	28.9	Abbott-Downing Truck & Body Co.	31

Price	Cyl.	H.P.	Maker	Page
2850	4	27.2	Tiffin Wagon Co.	32
3000	4	27.2	Sanford Motor Truck Co.	32
3000	4	27.2	Brinton Motor Truck Co.	31
3000	4	27.2	Larrabee-Deyo Motor Truck Co.	32
3200	4	32.4	New England Truck Co.	32
3200	4	27.2	Corbitt Motor Truck Co.	31
3250	4	27.2	United States Motor Truck Co.	32
3250	4	25.6	Rowe Motor Mfg. Co.	32
3250	4	22.5	Kelly-Springfield Motor Truck Co. (W. or C.)	31
3300	4	32.4	Maccar Truck Co.	32
3350	4	28.9	Gramm-Bernstein Motor Truck Co.	31
3500	4	29	Royal Motor Truck Co. of New York	32
3500	4	28.9	G. A. Schacht Motor Truck Co.	32

3 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
2895	4	27.2	Rennoc-Leslie Motor Co.	32
3950	4	28.9	Vim Motor Truck Co.	32
4100	4	22.5	White Co.	32
4125	4	32.4	Peerless Motor Car Co.	32
4500	8	....	Rowe Motor Mfg Co.	33
4600	4	28.9	Locomobile Co. of America	33

3½ Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
2750	4	28.9	Day-Elder Motors Corp.	34
3250	4	32.4	Hahn Motor Truck & Wagon Co.	34
3400	4	22.5	H. J. Koehler Motors Corp.	34
3450	4	32.4	Bessemer Motor Truck Co.	33
3465	4	30.6	Bethlehem Motors Corp.	33
3750	4	32.4	Brockway Motor Truck Co.	33
3760	4	32.4	Tiffin Wagon Co.	35
3800	4	25.6	Rowe Motor Mfg. Co.	35
3850	4	32.4	O. Armleder Co.	33
3850	4	32.4	Selden Motor Vehicle Co.	35
3875	4	32.4	Atterbury Motor Car Co.	33
3950	4	32.4	Larrabee-Deyo Motor Truck Co.	34
3975	4	34.4	Sanford Motor Truck Co.	34
3950	4	28.9	G. A. Schacht Motor Truck Co.	34
3950	4	32.4	United States Motor Truck Co.	35
4000	4	32.4	Corbitt Motor Truck Co.	34
4000	4	32.4	Gramm-Bernstein Motor Truck Co.	34
4100	4	32.4	Maccar Truck Co.	34
4200	4	28.9	Royal Motor Truck Co. of New York	35
4250	4	32.4	Hurlburt Motor Truck Co.	34
4250	4	32.4	Kelly-Springfield Motor Truck Co.	34
4300	4	28.9	Garford Motor Truck Co.	34
4600	4	40	International Motor Co.	34

4 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
4150	4	32.4	Peerless Motor Car Co.	35
4300	4	28.9	Gabriel Motor Truck Co.	35
4400	4	32.4	Kelly-Springfield Motor Truck Co.	35
4700	4	28.9	Locomobile Co. of America	35

5 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
4200	4	28.9	H. J. Koehler Motors Corp.	36
4500	4	32.4	Corbitt Motor Truck Co.	36
4500	4	32.4	Day-Elder Motors Corp.	36
4700	4	32.4	Peerless Motor Car Co.	36
4750	4	32.4	Larrabee-Deyo Motor Truck Co.	36
4750	4	34.4	Sanford Motor Truck Co.	37
4850	4	36.1	United States Motor Car Co.	37
4850	4	36.1	Brockway Motor Truck Co.	37
4900	4	36.1	Rowe Motor Mfg. Co.	37
4900	4	32.4	Kelly-Springfield Motor Truck Co.	36
4950	4	28.9	G. A. Schacht Motor Truck Co.	37
4975	4	36.1	Atterbury Motor Car Co.	36
5000	4	36.1	Royal Motor Truck Co. of New York	37
5000	4	36.1	Garford Motor Truck Co.	36
5000	4	36.1	Gramm-Bernstein Motor Truck Co.	36
5000	4	32.4	Selden Motor Vehicle Co.	37
5000	6	33.7	Tiffin Wagon Co.	37
5000	4	28.9	White Co.	37
5250	4	32.4	Hurlburt Motor Truck Co.	36
5500	4	38	Pierce-Arrow Motor Car Co.	36
5500	4	32.4	Walter Motor Truck Co.	37

5½ Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
5000	4	41.5	Maccar Truck Co.	38
5250	4	40	International Motor Co.	38

6 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
5200	4	32.4	Kelly-Springfield Motor Truck Co.	38
5200	6	33.7	Tiffin Wagon Co.	38
5300	4	41.5	Garford Motor Truck Co.	38
5400	4	42.2	Royal Motor Truck Co. of New York	38

7 Ton Commercial Cars.

Price	Cyl.	H.P.	Maker	Page
5500	4	40	International Motor Co.	38

Gasoline Truck Tractors.

Price	Cyl.	H.P.	Maker	Page
1750	4	19.6	H. J. Koehler Motors Corp.	38
2165	4	19.6	H. J. Koehler Motors Corp.	38
2895	4	27.2	Rennoc-Leslie Motor Co.	38
3400	4	28.9	Garford Motor Truck Co.	39
4050	4	32.4	Watson Wagon Co.	38
4400	4	36.1	Garford Motor Truck Co.	39
5100	4	41.5	Garford Motor Truck Co.	39
5500	4	40	Knox Motors Co.	38
5500	4	32.4	Walter Motor Truck Co.	39
6000	4	40	Knox Motors Co.	38

Pneumatic Truck Tires Revolutionize Fruit Handling Methods in Far South

Citrus Groves, Where Only Mule Teams Have Been Able to Work in the Past, Owing to Sandy Soil, Are Now Served by Big Motor Trucks Fitted With Big Pneumatic Tires. These go Anywhere and Save Time and Labor to an Astonishing Degree. Claim That Trucks Pay for Themselves in Season. A Big Field Opened to Truck Sales

By A. V. COMINGS

LARGE pneumatic truck tires have completely revolutionized hauling methods in sandy southern fruit farms, and have made possible the accelerated handling of perishable fruits to a point never dreamed of before in those districts. The coming of the pneumatic truck tire is the only thing that has made a wide use of motor trucks possible in this work, for these trucks have to travel much of their time over sandy soil, where solid tired trucks formerly dug in and stalled. With the use of the pneumatic tired trucks, owners of these great ranches have found profits mounting higher than ever before, and as profits are the final test, there is little doubt but that the successful experience of these southern fruit farmers will have a wide influence in extending the use of the pneumatic truck tire wherever it is necessary to drive motor trucks through sandy soil in the daily round of work.

Black Diamond grape fruit and oranges are grown on the fruit farms of John S. Taylor Co., at Largo, Fla., and for the past three seasons this concern has used International motor trucks for hauling fruit from the groves to the packing houses. During 1918 the company used five one-ton Internationals, all equipped with 36 x 6 Goodyear pneumatic tires, and the service of which these trucks are capable, with their big pneumatics, is well worth consideration.

Make Good Mileage With Full Loads

Each of these trucks carries forty boxes of fruit at a load, totalling approximately 4000 lb., a distance of from one to fifteen miles. The road they traverse is partly asphalt, but mostly soft sand, and yet the trucks average 10 to 18 miles per hour on the trip, fully loaded.

As an instance of what the trucks do in one day, figures were kept on a day when all five trucks were carrying grape fruit on a six-mile haul to the warehouse.

Good Mileage With Full Loads
Each of these trucks carry forty boxes, totaling approximately four thousand pounds, a distance of from one to fifteen miles

Each made six round trips, or 72 miles, and each delivered 1200 boxes of fruit, at an estimated cost per box of three cents, as against ten cents per box by the old mule team method.

Formerly two-mule teams were used for this work, making two trips a day over this distance. It would have taken twenty teams to accomplish what these motor trucks did, as well as twenty drivers.

Save Idleness at the Packing House

One of the greatest savings brought about by the motor trucks is in the time of employees in the packing house. In the old mule team days these employees had much idle time, waiting for the slow moving mules to bring the fruit, but this has been cut down to practically nothing by the trucks, for they keep fruit coming to the packing house in an unending stream, with the result that the packers put in full time at their work.

The Taylor groves pack about 150,000 boxes of fruit per season, and Mr. Taylor, the owner, states that the use of pneumatic tires on his trucks makes it possible for each truck to practically pay for itself in one five-months' fruit season.

Manager Mixon, of the Taylor groves, states that, "Through the sandy areas we have entirely revolutionized methods of handling produce through the use of the pneumatic tires. By the use of these pneumatic tired trucks we increase our speed, decrease our truck depreciation and the profit saved in hauling time, and in difference in crews, I would estimate at from $6000 to $7000 per season."

The Taylor trucks are also used for carrying barrels of water to the spraying machines throughout the groves, hauling fertilizer, timber, etc., over the sandy soil where solid tired trucks would be out of the question.

B. Kilgore, manager of the fruit groves of the West Coast Fruit Co., at Clearwater, Fla., states that "The pneumatic tired truck has been a surprisingly effective means of making fruit growing and fruit packing more profitable than it has ever been before."

The West Coast groves have a peculiarly light type of sand in which the use of solid tired trucks was absolutely prohibited by conditions. Until 1917 ten teams of mules, with two men to the team, were used. When pneumatic tires were introduced to the management, four Republic trucks were purchased immediately, one 1-ton, two 2½-ton, and one 2-ton. All were equipped with Goodyear pneumatice tires. Absolutely no trouble has been experienced with the trucks. Out of the ten teams, just one has been retained, for doing odd jobs, etc. Over 90,000 crates of fruits were handled by the trucks during 1918.

In their use of the Goodyear pneumatics the West Coast Company found that in their service there was very little wear to the tread, the principal wear being shown on the sides of the tires, where the constant rubbing of the heavy sand through which the trucks ploughed showed its effects.

Many other southern orchardists and fruit growers are having the same experience with pneumatic tired trucks, and it is believed that a wide expansion of the use of motor trucks in sandy localities will come in the very near future through the experience that these pioneers are having. Localities from which motor trucks have hitherto been barred because of their equipment only with solid tires, may now secure pneumatic tired equipment and use trucks much the same as they have been used in better paved regions.

Pneumatic Tires Prove Very Efficient for Sandy Soil

Localities from which motor trucks have hitherto been barred because of their equipment only with solid tires, may now secure pneumatic-tired equipment and use trucks much the same as in better paved regions

New York's Segregated Traffic Plans Will Probably be Abandoned

The National Traffic Association at a meeting held recently in New York City, took exception to certain regulations of vehicular traffic adopted a short time ago by the Police Commissioner. These regulations, described in our October issue, were strongly opposed by the Merchants' Association of New York, it being maintained that they worked hardship to users of commercial cars, particularly in certain districts.

Several speakers discussed the ordinance and contended that if it was enforced (it appears that it is not), in certain sections of the city light trucks engaged in delivery work would be obliged to cross and recross avenues now crowded with traffic. It was also contended that it would increase the mileage of a truck from 30 to 100 per cent. above normal, and that taxi fees would be excessively high.

A member of the executive committee introduced a lengthly resolution that handled the situation particularly well. However, exception was taken by a member, evidently not personally interested in motor trucks, to a certain paragraph, which started a lengthy discussion in which there appeared to be two defined interests. As a result it was decided to withdraw the resolution, and a special committee was appointed to investigate further the workings of the ordinance.

Several of the members who operate fleets of motor trucks stated that the ordinance was not being enforced; that is, no arrests have been made nor could they learn that there was any intention to prosecute drivers who transgress the rules. So it would appear that the ordinance may die a natural death.

Sewell Wheel Makes Changes in Personnel

The Sewell Cushion Wheel Co. announce the following change in their sales organization: W. M. Chadwick has been appointed manager of the Buffalo branch. W. W. Hargis will look after the sale of Sewell wheels on commercial trucks on the Pacific Coast; fire department sales on the coast remaining under the supervision of Frank C. Stover, 1124 Polk St., San Francisco.

E. H. Betzig, formerly with the Firestone Tire and Rubber Co., has been appointed manager of the St. Louis branch to succeed Geo. F. Willis.

The Nation's Life Depends Upon Its Roads

EFFICIENT REPAIR METHODS

Simple Repair Shop Cost System and Proper Method of Disassembling Continental Model C Engine

Editor's Note: This department is to be conducted primarily for the new repairman and dealer; also the repairman in the smaller towns who is anxious to place his shop on a better paying basis and do his work in a more systematic manner. We shall appreciate any suggestions or criticism that will help us make this department satisfy your needs.

By C. P. SHATTUCK

SERVICE is an important adjunct to sales, particularly in the less populated places, where lack of or faulty service is more noticeable than in the larger cities, although it is expected of the small truck dealer and the sub-agent just the same. Service is sold and it is given away. Usually the truck owner pays for repairs and replacements due to wear or accident, but, in some instances where service is highly developed, the owner is encouraged to send his truck at stated intervals to the service station for a free inspection.

Non-Productive and Productive Labor

Free inspection or even free minor adjustments take the mechanic's time, and this is **non-productive** or **idle labor,** Installing new shop equipment or maintaining same is idle or non-productive labor, as is the use of a mechanic for tuning up a new truck for the sales department. All these services **cost the dealer money, and he should know what these costs are so that in event the repair shop is not making money, the cause of the losses may be ascertained.**

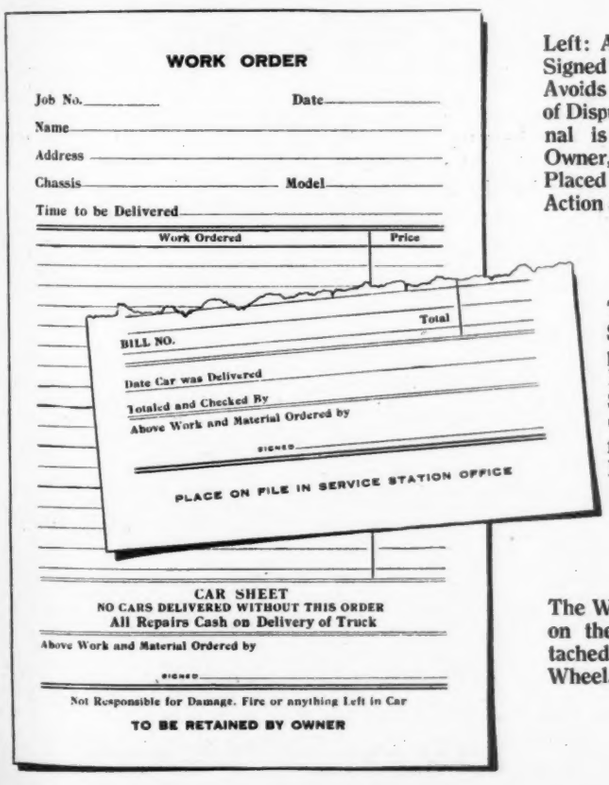
Too Much System Costly

The small or new dealer cannot afford to adopt a very elaborate system, one involving considerable clerical work, but he should adopt a simple system, one that will record all costs, and add to it as the business grows. The repair shop part of the system need not be complicated, but it should provide for the keeping of an accurate record of the repairman's time, equipment, material, parts and supplies used, and cost of work sent outside the shop. The system should also prevent all opportunities of the owner disputing the work.

Ordered Work is Signed For

To avoid the possibility of the owner disputing the work, a Work Order should be utilized. This is made out in duplicate. The duplicate is identical with the original except that it provides for "date finished work is delivered" and the "signature" of person or driver authorized to receipt for the machine. As may be noted, the order has a job number, date, name and address of owner, chassis, model and time to be delivered. The work to be performed is listed, and if a price be given, it is entered. Person authorized by owner of truck signs and is given "original" order, which is surrendered when truck is delivered.

Should it be found that additional work is required, the mechanic so reports and the office calls the owner on the phone. When possible, the owner is asked to call and sign for work, but invariably he will give the order by phone, in which event he is asked to send a confirmation of the order, particularly if the extra work involves much expense.


WORK ORDER

Job No. _____ Date _____

Name _____

Address _____

Chassis _____ Model _____

Time to be Delivered _____

Work Ordered	Price
	Total

BILL NO.

Date Car was Delivered

Totaled and Checked By

Above Work and Material Ordered by

SIGNED

PLACE ON FILE IN SERVICE STATION OFFICE

CAR SHEET

NO CARS DELIVERED WITHOUT THIS ORDER

All Repairs Cash on Delivery of Truck

Above Work and Material Ordered by

SIGNED

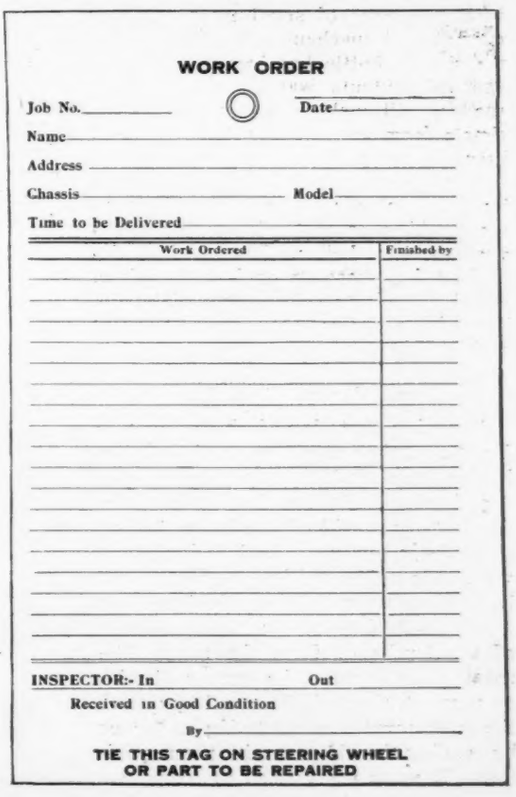
Not Responsible for Damage. Fire or anything Left in Car

TO BE RETAINED BY OWNER

Left: A Work Order Signed by the Owner Avoids the Possibility of Disputes. The Original is Given to the Owner, the Copy Being Placed in the Job Action Rack.

The Insert Shows the Duplicate, Which is Identically the Same as the Original Except for the Lower Part.

The Work Order Tag, on the Right, is Attached to the Steering Wheel.


WORK ORDER

Job No. _____ Date _____

Name _____

Address _____

Chassis _____ Model _____

Time to be Delivered _____

Work Ordered	Finished by

INSPECTOR:- In Out

Received in Good Condition

By _____

TIE THIS TAG ON STEERING WHEEL OR PART TO BE REPAIRED

Copy in Job Action Rack

The carbon copy (office) is placed in what is termed the Job Action Rack, where it is available in case the owner phones for the truck before the repairs are completed or for any information dealing with the work. The rack is a handy reference for dealer to note the work on hand, order, etc., as well as for the mechanic in charge of the shop. The work ordered is entered on a Shop Order or card that is tied to the steering wheel or other convenient place, and the card is a duplicate of the office record. Any additional work ordered or required is, of course, entered on this card.

Marking Time Cards

As previously pointed out, the Time Card should supply a record of productive and non-productive labor. Some foremen of large service stations say that it is not practical to allow a workman to enter his time with a pencil, that a clock must be used. A time-recording device is preferable, as it eliminates the human equation, but with a limited number of workmen, say one or two, use can be made of the pencil method. Any method will fail unless rigidly enforced. **Insist that each workman mark or stamp the starting and leaving time of each job, and use a new card when performing non-productive labor.**

Requisitions

Record should be kept of material purchased, cash or charged, and of work done outside. The small shop will send more or less machine work, such as grinding crankshafts, boring cylinders, etc., to specialists. A requisition for this should be sufficiently flexible to care for cash purchases of small material. For example: A mechanic will discover that the shellac bottle has been tipped over and its contents wasted, and, needing shellac, will make out a requisition, a simple form made in duplicate. It will bear the name of the shop department, the quantity required and will be signed by the mechanic. The boy will go to the bookkeeper and ask for money to purchase the shellac. The original slip is filed for charging against the shop, but the duplicate, when returned by the boy with the change, serves as a petty cash voucher.

Charge Account Requisitions

Assuming that the Work Order calls for the regrinding of the crankshaft, reboring the cylinders, etc.: The requisition is made out, but in this case the duplicate goes with the order, and when the grinding concern renders its bill, it must bear the requisition number. Similarly, if new parts are required and are to be obtained from, say, the distributor of the trucks or from the agent (the repair shop may not be connected with an agency), time will be saved by noting the parts number of parts if possible or by sending the old part with the requisition. If parts are carried by shop, use of the numbers with the requisition will be of value in the inventory of parts.

Cash on Delivery

The system outlined calls for cash on the delivery of the truck. The work order sheet in the Job Action Rack is not taken out until all work is completed, when all requisitions, work card, time cards and copy of invoice or release are placed in a Job Envelope. Provision is made for entering the bill number and date of delivery on the work order sheet filed. The envelope bearing owner's name, address, details, etc., is filed. This is done in case the owner later complains of certain work, etc. And it has been known to happen that an owner demanded the replacement of a part because of faulty workmanship, when the records showed that no work had been done on that component!

PAWTUCKET TRUCK CO.

REQUISITION No. 27

Dept..... Date.....

Job No.....

QUAN.	PARTS No.	DESCRIPTION	PRICE

Deliver to.....

When Wanted.....

Signed.....

NOTE—ALL CHARGES BILLED US MUST GIVE REQUISITION NUMBER (ON DUPLICATE)

Flexible Form of Requisition Made in Duplicate

This form is employed when sending work outside of the shop, also the purchases made for the shop.

Compiling Estimate Data

Some large service stations will estimate the cost of repair work, but this is not practical for the young shop, as estimates are based on records of the average time consumed for doing the job plus what is termed a factor of safety and overhead. It is suggested, however, that a record be kept of certain standard work, such as cleaning out carbon and grinding valves; that is, of a particular type engine or model. Other overhaul jobs can be treated in a similar manner, but it should be remembered that the fast workman is not always the most efficient. With records dealing with labor and material charges one can, in time, estimate certain work.

No..... Date.....

Owner.....

Est. Hrs..... Time Promised.....

Total Hrs..... Amount.....

	MAN'S No.			MAN'S No.	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	
	On			On	
	Off			Off	

Time Card for Keeping Record of Labor

Repairmen are given a number instead of name, to save time, and this method is used when brass checks are issued for tools by foreman or stockroom clerk.

Motor No. Job No.

Chassis No. Date

Name

Address

This Job Envelope contains the following

WORK CARD
WORK SHEET
TIME CARDS
REQUISITIONS
COPY OF INVOICE

Invoice Date Ledger Page

TO BE FILED IN JOB ENVELOPE FILE UNDER OWNER'S NAME

Envelope in Which Are Placed all Cards, Etc., and Filed for Reference Under Truck Owner's Name

Ideas Which Will Help to Conserve the Mechanic's Time

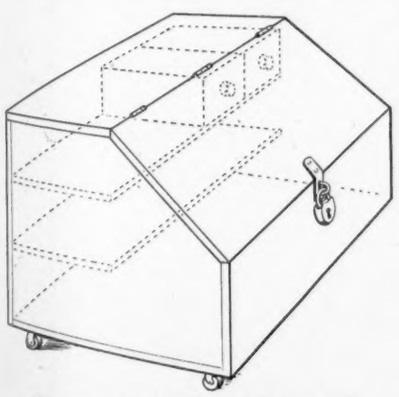
Much of the lack of efficiency in the repair shop is largely due to the proprietor, who tolerates methods making for waste, particularly when teaching young men repair work. For example: In some shops the parts of a disassembled engine are spread all over the work bench and the smaller parts are jumbled together in a box. As a result of these inefficient and careless methods, much time is wasted by the mechanic pawing over the small material to locate a cap screw, nut or bolt, which is generally at the bottom of the pile. Even the experienced workman familiar with the parts will lose some time, but the novice will waste considerably more, and the customer pays. And there is another angle, an old story to the expert repairman, and that is the loss of small parts, the "borrowing" of a nut or bolt from the other fellow.

Systematic Disassembly

If the expert familiar with the unit can quickly pick out the required cap screw from a mess of six different sizes and lengths, the novice cannot do so readily; therefore, it is suggested that instead of adopting the methods of the expert, he be taught to place certain sets of bolts and nuts with their lock washers in a compartment of a disassembly box. The need for this will be apparent when it is considered that in the tearing down of the engine, described in detail herewith, that there are nearly 200 bolts, nuts, cap screws, machine screws and their lock washers. There are about 14 sets of bolts and nuts, to say nothing of the cap screws and the washers. Then there are the Woodruff and plain keys, taper pins, thrust washers, etc. These should be separated from the other material to avoid the possibility of injury, for a burred key invites trouble.

Separating Small Parts

It is suggested that in the tearing-down process that the cap screw used in the governor, for example, be placed in a compartment of a disassembling tray, as outlined in an accompanying sketch, and that other small parts be similarly handled. It is also advisable to replace, when practical, nuts, bolts, etc., on the units removed. For example: The replacing of the machine screw used to retain the exhaust pipe in the hot-air horn or stove will save searching for the screw when assembling.



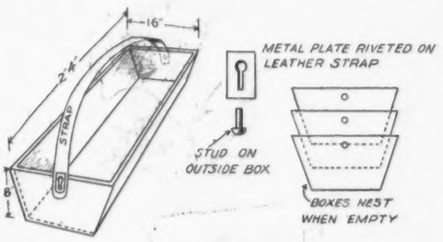
Storage or Parts Box for Large and Small Parts

The box measures approximately 3 x 5 feet. Shelves are provided for the larger parts, while trays on the top shelf take care of the nuts and bolts, etc.

Small parts, such as the accelerator rod, hot-air stove, clutch spring, priming cocks, valve plugs, intake manifold (small), inlet and outlet water pipes, hose, clamps, etc., can be placed in assembly boxes, a type of which is shown herewith. These boxes can be nested if not too full. A removable strap permits of easy carrying.

Storing Large Parts

Large parts, such as the cylinder block, flywheel, crankshaft, camshaft, crankcases, etc., should be marked or tagged with the job number, if these are to be sent outside for repairs or left on the benches. Similarly, if the magneto is to be sent to a service station for an overhaul, it should be tagged with the job number. Any other unit, such as a carburetor, starting motor or generator, should be tagged, and if nothing is required of these units other than cleaning, they should be so stored as to avoid the possibility of injury.



Assembly Boxes

These are constructed as shown so that several can be nested when not too full. One strap serves a number of boxes and does not prevent nesting or placing two boxes nested in the storage box.

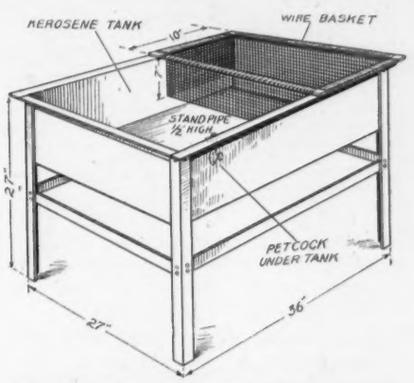
An accompanying sketch shows a box for storing large and small parts, and having shelves for trays of small parts. The box is mounted on castors, so it can be moved to the work, and a lock prevents "the other fellow 'borrowing.'"

Dirt-Proof Tags

In some large shops small assembling boxes are employed, and a large box to take care of the big parts, but in these shops the mechanics are experienced, know each nut and bolt. But large parts, those not placed in the box, are marked or tagged. If it be desired to tag large parts or the compartments of the trays, treat the tags, cards, etc., with a coat of white shellac after they are marked. This will permit of cleaning the tags without blurring the identification mark. The shellac treatment can be used with the cards of the bins of the parts room, etc.

Washing Away Dollars

The day has gone by when the customer will pay for five or six gallons of gasoline used for washing the grease, etc., from parts. When fuel sold for 10 cents the gallon, waste methods were permitted, but not in these days. So the practice of taking a part to the wash-stand or other convenient place, and using a gallon or two of gasoline or kerosene for each unit, should not be tolerated.



Stand for Washing Parts With Kerosene

The legs are made of angle iron, top rails and cross pieces of flat stock. All parts are riveted. Heavy tin pan is made to set in frame. A coarse wire basket is made to fit as shown. The latter is used for washing small parts.

Up-to-date shops, those making a study of efficient and time-saving methods, use washing stands similar to that shown herewith. Five or ten gallons of kerosene in a washing stand can be used over and over again, and some idea of the saving effected may be obtained from the statement of the manager of a large service station using the stand shown. He now uses six gallons of kerosene against 50 formerly required with the old method, so it is obvious that a stand will soon pay for itself and save many dollars in the course of a year.

Special Disassembling Tools

The complete disassembly of the engine will require the removal of the crankshaft, but before it can be displaced, the clutch must be removed. A special tool is suggested herewith to compress the powerful clutch spring, and the sketch outlines the use of the tool, which can be constructed by the mechanic. Another essential tool is a timing gear puller. That shown will permit of removing the fan pulley and timing gears. Gears should not be driven or pried off, if a gear puller can be used.

Requisitions for Parts, Etc.

To save the time ordinarily consumed in making several trips for new parts, material, etc., and to familiarize the novice with them, it is suggested that he list the renewals required as he dismantles

the work. For example: The following is a list of parts that will, possibly with one or two exceptions, have to be replaced with new in the reassembly of the engine dealt with in this article:

Inlet and outlet hose	2
Hose clamps	4
Radiator pads	2
Hot air stove gasket	1
Spark plug gaskets	4
Intake pipe (cyl.) gasket	1
Outlet water pipe gasket	1
Inlet water pipe gasket	1
Gear case (timing) gasket	1
Accelerator pedal pin	1
Intake gasket, carburetor	1
Governor housing gaskets	2
Water intake cover plate gasket	1
Valve port plug gaskets	8
Exhaust manifold gaskets	4
Oil indicator case gasket	1
Crankcase gaskets	2
Oil indicator plug gasket	1
Oil indicator washer	1
Oil reservoir plug gasket	1

The list does not include the renewals probable, such as piston pin, camshaft, clutch shaft, valve guide, pump shaft bushings, etc,. or other components generally requiring replacement after long service, and which will be determined in the inspection, to be dealt with in another article. No attempt is made to list the tools required or shop equipment, other than to call attention to the need of adopting time and labor saving devices, such as a crane or hoist for removing, handling and replacing heavy units, and a suitable engine stand.

Disassembling Continental Model C Engine

The following method of disassembling the model C Continental, 3-point suspension, four-cylinder engine, used in the Federal 2-ton model O truck, and which steps can be followed with models G, H, M, and P, are those employed by the service department of the Morton W. Smith Co., Inc., New York distributors of Federal trucks.

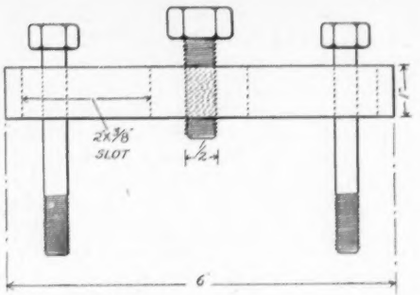
Remove hood.

Drain water from radiator. Remove petcock.

Disconnect radiator-dash tie rod by removing cotter pin in two bolts in two yokes. **Replace bolts** in yokes and pin.

Remove hose clamps (4) outlet and inlet, radiator.

Take out 4 cap screws, lock washers, holding starting crank bracket cap. Remove assembly.



Take out radiator bolt nuts (2) and lock washers and remove bolts securing radiator to frame. Displace rubber pads, if any. **Lift off radiator.**

Disconnect magneto ground wire at dash switch terminal.

Disconnect accelerator operating rod. (Carburetor to pedal.)

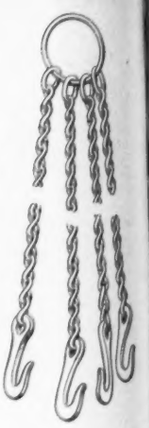
Remove **floorboard. Remove toe-board** by unscrewing countersunk machine screws.

Remove lamps and bolts holding dash and displace **dash.**

Take out bolts securing right, left and rear **dust pans** to engine arms and crankcase.

Shut off fuel at tank.

Adjustable Gear Puller for Displacing Timing Gear



Chain Arrangement Used for Removing and Replacing Engine in Stand and Chassis Frame.

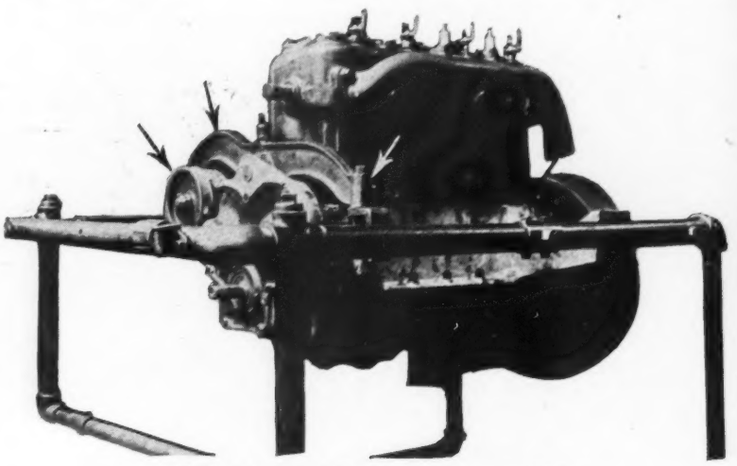
Partly strip engine in frame.

Remove cotter pin in **hot air pipe** to hot air horn of exhaust line and pull out pipe. **Replace pin in pipe.**

Disconnect fuel line at carburetor.

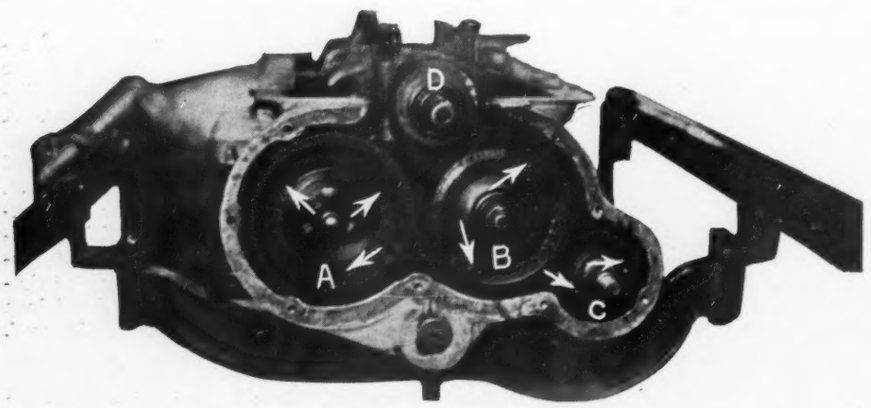
Remove bolts (2) securing **carburetor** to intake pipe, also the gasket.

Disconnect governor throttle valve housing from intake manifold and governor housing. The last-named is on pump side of engine and is retained by three cap screws which, when displaced, permit of removing the governor as a unit. Note—The housings are connected by a tubing containing the wire actuating the throttle valve.



Engine in Stand, Ready for Disassembling

Before timing-gear case can be removed, the fan pulley (marked with arrow) must be displaced. Arrows also indicate beam support and its use with an L-shaped bracket for supporting engine in stand.



Crankcase With Timing-Gear Case Displaced

A, Camshaft gear; B, Idler gear; C, Pump gear, and D, Crankshaft gear. Arrow indicates threaded holes for attaching arms of gear puller. Gears should be marked for correct remeshing or timing if not already marked.

Remove gasket and horn by taking out nuts, washers and bolts (2) in flange of hot air horn and take out screw holding horn end of exhaust pipe.

Slip exhaust pipe from muffler.

Remove six nuts, lock washers and bolts **from rear universal joint flange** connecting propeller shaft with transmission drive gear flange. **Note**—Turn shaft until two nuts are at lowest point, then turn shaft 90 degrees and take off next two nuts and so on. Nuts are more readily accessible in this position.

Take off four nuts and washer **securing** front end of **drive shaft** to **clutch hub studs.** (4)

Slip off shaft complete with joints, clutch cone sleeve and yoke. It may be necessary to **depress clutch pedal to clear sleeve.**

Remove magneto with cables and ground wire.

Loosen tension of fan belt, **remove belt,** and **displace fan** with its bracket as a unit.

Disconnecting Engine

Remove nuts, washers and bolts (2) **of front beam support** and similar number of **rear supports (three-point suspension, pivoted in front).**

The engine is now ready for removal from the frame. Roll up crane or hoist. The chains shown in an accompanying sketch are preferable to rope and are attached as follows: One over each end of beam support and engine arms. In placing hook in chain make sure it is secure and that each chain is hooked the same length. Take up slack in chain by crane or hoist and have chain of latter directly over center of engine so it will not sway when lifted from the frame. **Hoist slowly.**

Roll crane to **washing tank** or washstand **and clean engine, after** which place engine in stand.

Stripping Engine

Remove **spark plugs** (4) and gaskets.

Take out **valve port plugs** (8) and gaskets.

Remove **priming cocks.** (4)

Remove **cable supports.** (2)

Take off **exhaust manifold nuts.** (8)

Remove **exhaust manifold and gaskets.** (4)

Remove **intake pipe** (cylinder) **and gasket.**

Displace **cap screws** (2) retaining outlet water pipe to water cover plate and gasket.

Remove **caps screws** (2) **holding oil indicator** gauge to crankcase and displace gasket.

Remove **cap screws** (2) **retaining water inlet pipe** (pump to cylinder), and remove gasket.

Disconnect **coupling between pump and governor.**

Remove **pump** as a unit.

Displace **oil pipe** connecting **lower** and **upper crankcase.**

Unscrew and **remove breather. Drain oil** from crankcase (lower) and **unscrew plug carrying oil indicating rod and float.** Plug has a gasket.

Remove bolts (9) securing **cylinder block** to upper crankcase.

Lift off cylinder block, pulling straight up so as not to injure pistons or rings. **Take off gasket.**

Revolve engine through 180 deg., **remove bolts** of **lower crankcase** and **take off case and gasket.**

Disassembling Clutch

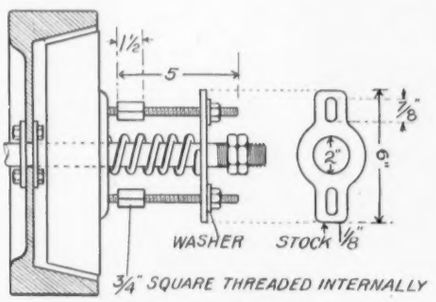
The clutch and flywheel are best removed after the engine is locked in the stand.

The clutch is of the cone type and the clutch spring will require a compressing tool to displace it. That shown in an accompanying sketch makes for easy and rapid removal and replacement of the spring. The square ends of the bolts are screwed on to the clutch hub studs and the two nuts of the bolts tightened until the spring is fully compressed. The two clutch spring nuts on clutch shaft are backed off and the tension of the clutch spring fully released. Remove spring compressor and displace thrust bearing complete and the clutch spring. The clutch (male) will now slide off the shaft.

Removing Flywheel

The flywheel is secured to the crankshaft flange by six bolts and nuts. By removing these the wheel can generally be slid off. If not, use a wheel puller or drive off. Remove flywheel pointer.

Reverse engine in stand as previously explained, and with the lower crankcase



Clutch Spring Compressor
A handy tool for removing and replacing clutch assembly.

displaced, **mark the connecting rod bearing caps** (crankshaft ends), crankcase and rods with a prick punch, if not already marked. This suggestion is made so as to avoid the possibility of mixing the parts in replacing. Turn crankshaft until crankthrows of Nos. 1 and 4 rods are at extreme vertical top position, displace cotter pins in rod nuts, remove caps and take out rod with piston. Replace caps with shims and catch nuts. Turn shaft through 180 deg. and displace Nos. 3 and 4 rods, etc.

Removing Crankshaft

The crankshaft is retained in the upper half of the crankcase by caps carrying bearing material, and there are three of these caps, or one each for the front, center and rear main bearings. To displace shaft, remove cotter pins of bearing cap nuts and back off nuts. Lift out shaft, replace caps on studs and catch nuts in original order on studs. Mark caps with punch if necessary.

Displacing Timing Gears

Before displacing the timing gears the **fan pulley must be removed with a gear puller.** Next remove the machine screws holding timing gear case to crankcase and remove gear case, **exposing the camshaft, idler and pump gears. There is a gasket between the gear and crankcase.**

The camshaft gear is secured by three cap screws wired together. **Remove wire and screws** and displace gear with gear puller. The idler gear is mounted on a stud having a bushing and a thrust washer, and is retained by a nut, cotter pin, and a No. 3 Woodruff key. The pump gear is keyed with a No. 9 Woodruff to the pump shaft, has an oil retainer and thrust washer, and is locked with a castellated nut, cotter pinned. **Use gear puller for removing gears** which have teeth of coarse pitch and wear of which affects the timing the engine.

Removing Camshaft

The camshaft is pulled out from the timing gear end and has three bearings or bushings, thrust cup, button plate, spring and washer. There is also a plug at flywheel end.

The governor shaft (pump gear) is mounted in a housing directly in back of pump gear, and has two bushings for bearings. The governor gear is secured to shaft by a taper pin and a key, which are driven out, as are the key and pin retaining pump coupling or flange before pulling out the shaft. It is removed at timing gear case end.

Washing Case and Parts

The engine is now completely disassembled, with the exception of the oil pump and its connections in the lower crankcase. The lower and upper case, shafts, gears, nuts, bolts, etc., are now taken to the washstand, thoroughly cleaned and made ready for inspection.

Removing Valves

Unscrew wing nuts of valve covers and remove plates.

Remove valve springs with compressing tool.

Push up on valve stems until valves clear ports and displace valves.

The **pushrods** (8) are removed as follows:

Hold hex-head adjusting screw with wrench and loosen with wrench the locking nut.

Screw out adjusting screw with lock nut. (Right-hand thread.)

Slip pushrod down through pushrod guide.

To prevent injury to valves, which should be marked if not numbered, place them in a rack or container, which is easily constructed by drilling holes, slightly larger than the diameter of the valve stems, in a box or wooden rack. This rack should be tagged with the job number or the number placed on the container.

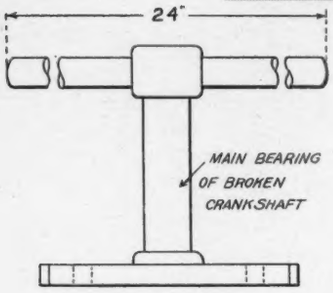
Water Jacket and Oil Pump

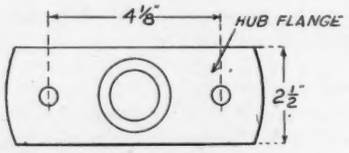
Clean water jacket of the cylinder block by removing the water intake cover plate retained by cap screw and made tight by a gasket.

The oil pump is of the plunger type operated from the camshaft. The pump will require no attention other than cleaning. Remove plug at bottom of case, displace ball, and clean ball and pump. Flush the latter and screen to displace any foreign matter.

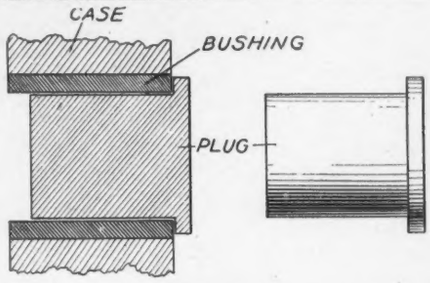
(To be continued)

Helpful Suggestions for the Repairman

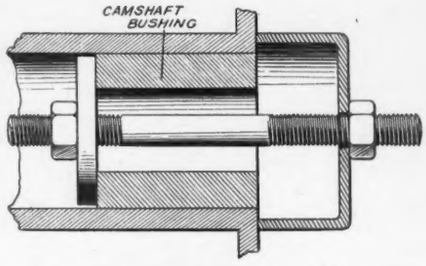




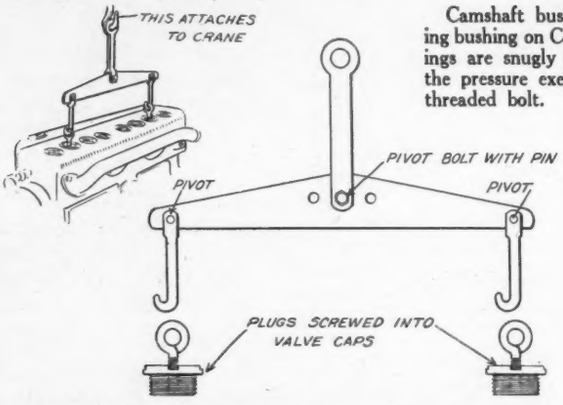
Crankshaft tool for rotating crankshaft when scraping in and fitting main bearings after flywheel has been removed. It is constructed from an old crankshaft, the hub flange being cut down as indicated, and a hole drilled in bearing section to take a 24-in. rod, which is utilized as a lever when rotating the crankshaft. Contributed by C. Danhauser, New York City.



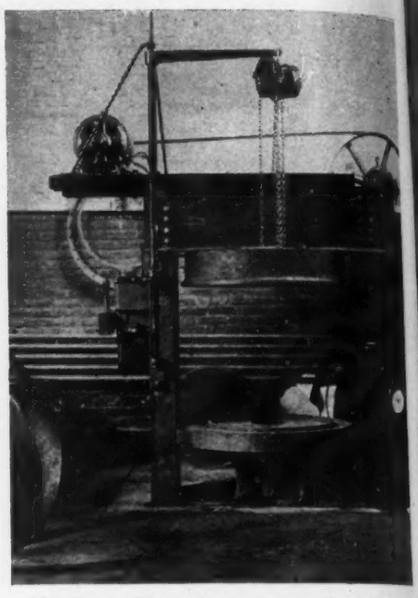
Plug used for removing bushings. These plugs can be made up in various sizes and kept in a box for instant use.



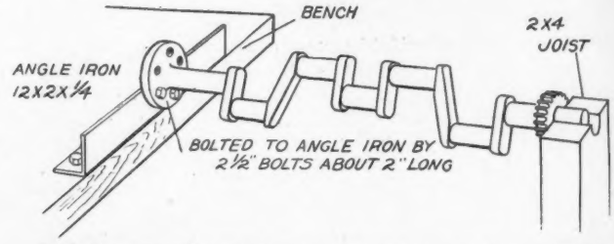
Camshaft bushing puller utilized for displacing bushing on Continental engines. These bushings are snugly fitted, but are easily drawn by the pressure exerted by tightening the nut on threaded bolt.



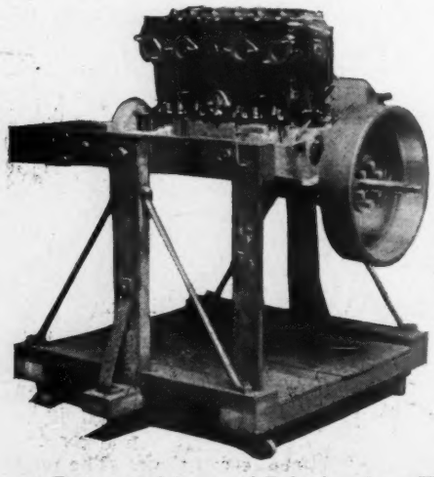
Device for removing and replacing engines. Plugs with eyes are screwed in valve ports, providing means for attaching the hooks of the lifting device. The holes on either side of the pivot bolt are used when it is desired to slightly tilt the engine, which is sometimes necessary when replacing it in the frame. It can be used with a crane or falls and tackle, replacing chains or rope.

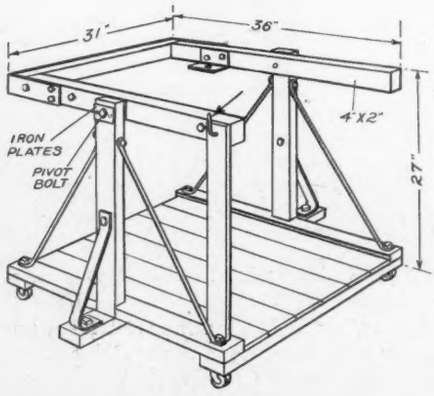


Handling solid truck tires generally requires the services of two men. George Melladew, foreman of service station of R. M. Sauers, Springfield, Mass., Federal distributor, has eliminated the need of one man by adapting a crane to a tire press. It not only permits the operator to walk around the press, but makes easy handling of heavy tires. The supporting bar is of 2-in. steel, retained in brackets bolted to upright. Tires are picked up from the adjacent supply pile and swung into place.

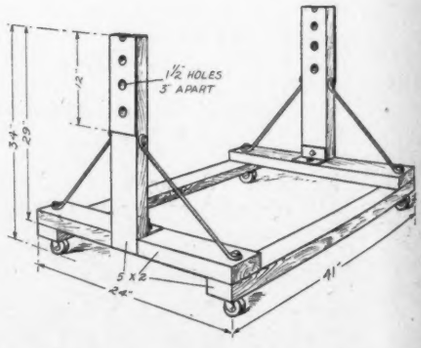


In fitting connecting rod bearings and working on the crankshaft generally it should be firmly anchored. In the service station of Morton W. Smith Company, Incorporated, New York, use is made of an angle plate bolted to the work bench. The gear end of shaft is supported by a joist equal in height to that of the bench. The holes in angle plate are one-half inch, and bolts about two inches long are used.





Engine stand for use of Federal engines: This stand is constructed of 2 x 4 joists. The frame to which the engine is bolted is held in a horizontal plane, by an L-shaped pin in the rear upright as shown by arrow. When it is desired to work on bearings, the pin is displaced and the V-shaped frame member with engine on it is turned through 180 degrees and the locking pin replaced. When the three-point Federal engine is mounted on this stand, use is made of a pair of L-shaped irons. The four-point suspension Federal engine is secured to the U-shaped part of the stand by two half-inch bolts on either side, these passing through the frame and their threaded ends engage with the arms of the engine. These bolts must be of the same diameter and thread as those used to secure the engine in the chassis frame.



Illustrating use of stand for supporting frame when displacing front axle, springs, etc., and permitting chassis to be moved about. A piece of iron pipe is inserted in the holes for the purpose of supporting the frame. Various heights can be obtained.

Latest Prices of Various Capacities of Gasoline and Electric Commercial Cars—Gasoline and Electric Truck-Tractors Included

This list gives the latest price of each model produced by the manufacturers of Commercial Cars, corrected up to the 1st of each month preceding date of issue. ***New prices in this issue are in bold-face type.***

In the department of "New Commercial Cars" page, will be found particulars concerning new models or changes.

Acme—Acme Motor Truck Co.
1-ton $1950
2-ton 2750
3½-ton 3650
5-ton 4750

All-American—All-American Truck Co.
AA, 1-ton 1295

Atlas—Martin Truck & Body Corp.
19, ¾-ton 1135

Atterbury—Atterbury Motor Car Co.
1½-ton 2575
2-ton 2975
2-ton long w. b.. 3075
3½-ton 3875
3½-ton long w. b. 3975
5-ton 4975

Autocar—Autocar Co
21F, 1½-2-ton ... 2050

Available—Available Truck Co.
1-ton 2250
2-ton 2950
3½-ton 4200
5-ton 4900

Beck—Beck-Hawkeye Motor Truck Wks.
A, 1-ton 1550
B, 1½-ton 1950
C, 2-ton 2250
D, 3-ton **2650**

Bell—Bell Motor Car Co.
G, 1200 lb. 1150

Bessemer—Bessemer Motor Truck Co.
G, 1-ton 1495
H, 1½-ton 1945
J, 2-ton 2490
K, 3½-ton 3450

Bethlehem—Bethlehem Motors Corp.
1½-ton 1965
2½-ton 2365
3½-ton 3465

Brinton—Brinton Motor Truck Co.
H, 1-ton 1500
F, 2½-ton 3000

Briscoe—Briscoe Motor Corp.
B-24 Open b. 885
B-24 Closed b. .. 910

Brockway—Brockway Motor Truck Co.
J2, 1½-ton **2450**
K3, 2-ton **2850**
R, 3½-ton **3750**
5-ton **4850**

Chevrolet—Chevrolet Motor Co.
1-ton Chassis ... **1325**
1-ton Express .. **1460**
1-ton Express with top **1545**

Collier—Collier Motor Truck Co.
16, 1¼-ton Speed. 1375

Columbia—Columbia Motor Truck & Trailer Co.
E, 2-ton **2350**

Comet—Comet Automobile Co.
1¼-ton 1575

Commerce—Commerce Motor Car Co.
E, 1-ton 1500

Concord—Abbott-Downing Truck & Body Co.
1½-ton **2450**
2½-ton 2850

Conestoga—Conestoga Motor Truck Co.
1800 lb. **1350**
1½-ton 2250

Corbitt—Corbitt Motor Truck Co.
E, 1-ton $2000
D, 1½-ton 2400
C, 2-ton 3000
B, 2½-ton 3200
A, 3½-ton 4000
AA, 5-ton 4500

Corliss—Corliss Motor Truck Co.
1000 lb. Chassis .. 715

Dart—Dart Truck & Tractor Corp.
E, 1-ton 2100
CC4, 2-ton 2950
L, 3½-ton 4000

Day-Elder—Day-Elder Motors Corp.
J, ¾-ton 1045
A, 1-ton 1775
B, 1½-ton 2075
D, 2-ton **2450**
C, 2½-ton 2750
F, 3½-ton **3450**
E, 5-ton 4500

Dearborn—Dearborn Motor Truck Co.
A, 1-ton chain .. **975**
F, 1½-ton worm. 1980

Defiance—Turnbull Motor Truck & Wagon Co.
1½-ton 1795
2-ton 1995

De Kalb—De Kalb Wagon Co.
E2, 2-ton 2100
2½-ton 2600

De Martini—De Martini Motor Car Co.
A17W, 1-ton 2250
C17W, 2-ton 2750
E17W, 3-ton 3650
G17W, 4-ton 4250

Denby—Denby Motor Truck Co.
12, 1-ton 1650
13, 2-ton 2350
15, 3-ton 2775
210, 5-ton 4900

Diamond T—Diamond T Motor Car Co.
J5, 1-ton 2125
J4, 1½-ton 2550
J3, 2-ton 2925
LB, 3½-ton 4150
R, 5-ton 4950

Dispatch—Dispatch Motor Car Co.
G, 1500 lb. Chassis 1200

Doane—Doane Motor Truck Co.
2½-ton **3500**
6-ton 5650

Dodge—Dodge Brothers
1000 lb. 1085

Dorris—Dorris Motor Car Co.
K4, 2-ton 2985

Double Drive—Double Drive Truck Co.
1½-ton, front wheel drive 2500
3-ton, four wheel drive 4000

Douglas—Douglas Motors Corp.
1½-ton 2000

Duplex—Duplex Truck Co.
E, 3½-ton 4000

Durable—Durable Motor Truck Co.
B2-18, 1½-ton ... 2040

Economy—Economy Motor Co.
4-36T, 1250 lb. .. 1195
4-36T, 1-ton 1395

Ellsworth—Mills-Ellsworth Co.
25A, 1000-lb. $855

Fageol—Fageol Motors Co.
2-ton 3300
3½-ton 4250
5-ton 5100

Famous—Famous Trucks, Inc.
B-34, ¾-ton **1145**
B-10, 1-ton **1690**
B-14, 1¼-ton **1890**
B-12, 1½-ton **2250**

Fargo—Fargo Motor Car Co.
P, 2-ton 2200

Federal—Federal Motor Truck Co.
S, 1-ton 1900
T, 1½-ton 2350
U, 2-ton 2600
W, 3½-ton 3350
X, 5-ton 4400

Ford—Ford Motor Co.
T, 1-ton 550

F. W. D.—Four Wheel Drive Auto Co.
B, 3-ton 4600

Fulton—Fulton Motor Truck Co.
FX, 1½-ton 1850

Gabriel—Gabriel Motor Truck Co.
C, 1-ton 1950
E, 2-ton 3250
F, 3-ton 4300

Garford—Garford Motor Truck Co.
75C, 1-ton 2500
66B, 1½-ton 3000
66BL, 1½-ton 3100
70B, 2-ton 3300
70BL, 2-ton 3400
77B, 3½-ton 4300
77BL, 3½-ton ... 4400
68, 5-ton 5000
68L, 5-ton 5100
69, 6-ton 5300
69L, 6-ton 5400

G.M.C.—General Motors Truck Co.
15, 1500 lb. 1775
21, 1-ton 2125
1½-ton 2500
2-ton 2800
3½-ton 3900
5-ton 4500

Geneva—Geneva Wagon Co.
B, ¾-ton 700
C, ¾-ton 750

Gersix—Gersix Mfg. Co.
G, 2½-ton 3150
H, 2½-ton 3150
K, 2½-ton 3150

Giant—Chicago Pneumatic Tool Co.
15, 1-ton 1850
1½-ton 2250
2-ton 2850
2-ton, long w. b.. 2900
3½-ton 3850

Globe—Globe Motor Truck Syndicate, Ltd.
A1, 1-ton **1625**
B, 1½-ton **1990**
C, 2-ton **2400**
CC, 2-ton **2500**

Gramm-Bernstein—Gramm-Bernstein Motor Truck Co.
1½-ton **2450**
2½-ton **3350**
3½-ton 4000
5-ton 5000

Grant—Grant Motor Car Corp.
12, ¾-ton $1125
10 (124 in. w. b.) 1885
11 (140 in. w. b.) 1935
15 (124 in. w. b.) 2150
16 (140 in. w. b.) 2250

Hahn—Hahn Motor Truck & Wagon Co.
B, ¾-ton **1225**
C, 1-ton **1950**
D, 1½-ton **2225**
E, 2-ton **2500**
F, 3½-ton **3250**
G, 1-ton **1375**
H, 2-ton **1950**

Hall—Lewis-Hall Iron Works
2-ton 2675
3½-ton 3500
5-ton 4500
5-7-ton 4500

Harvey—Harvey Motor Truck Co.
WFA, 2½-ton .. 3050
WHA, 3½-ton .. 3950
WKA, 5-ton 5050

Hawkeye—Hawkeye Truck Co.
K, 1½-ton 1900
L, 2-ton 2500

Henderson—Henderson Bros. Co , Inc.
Model C 1350
Model D 1750
Model E 1850

Hendrickson—Hendrickson Motor Truck Co.
G, 2-ton 2850
H, 3½-ton 3650

Higrade—Higrade Motors Co.
A17, ¾-ton to 1750 lb. 1850
A18, 1-ton to 2250 lb. 2100

Hoover—Hoover Wagon Co.
1500 lb. 1600
2250 lb. 2250

Hurlburt—Hurlburt Motor Truck Co.
1½-ton 2600
2-ton 3500
3½-ton 4250
5-ton 5250
7-ton 6500

Independent—Independent Motor Co.
1-ton 1685
2-ton 2250

International—International Harvester Corp.
H, 1500 lb. 1550
F, 1-ton 1850
F, 1-ton long w. b. 1900
K, 1½-ton 2200
K, 1½-ton long w. b. 2250
G, 2-ton 2600
G, 2-ton long w. b. 2650

Jones—Jones Motor Car Co.
1-ton 1395

Jumbo—Nelson Motor Truck Co.
2-ton 2500

Kelly-Springfield—Kelly-Springfield Motor Truck Co.
K31, 1½-ton 2750
K32, 1½-ton 2750
K35, 2½-ton 3250
K36, 2½-ton 3250
K40, 3½-ton 4250
K45, 4-ton 4400
K50, 5-ton $4900
P60, 6-ton 5200

Kissel—Kissel Motor Car Co.
General Utility.2073.50
Freighter 2832.50
Heavy Duty ...3905.00
Dreadnaught ..4785.00

Kleiber—Kleiber & Co., Inc.
AA, 1-ton 2400
A, 1½-ton 2650
BB, 2-ton 2950
B, 2½-ton 3500
C, 3½-ton 4100
D, 5-ton 5100

Koehler—H. J. Koehler Motors Corp.
K, 1¼-ton 1450
L, 2½-ton 1985
M, 2½-ton 2785
O, 3½-ton 3400
R, 5-ton 4200

Lane—Lane Motor Truck Co.
G, 1½-ton 2250
H, 2-ton 2975
K, 3½-ton 3900

Lange—Lange Motor Truck Co.
B, 2-ton 2900

Larrabee-Deyo—Larrabee-Deyo Motor Truck Co., Inc.
M, 1-ton 1950
N, 1½-ton 2450
O. P., 2½-ton .. 3000
A, 3½-ton 3950
T, 5-ton 4750

Lippard-Stewart—Lippard-Stewart Motor Car Co.
1500 lb. 1900
1-ton 2250
1½-ton 2850
2-ton 3050

Loyal—Loyal Motor Truck Co.
1000 lb. 865
Sp. 1500 lb. 1025
1-ton 1300

Luverne—Luverne Automobile Co.
2-ton 1750

Maccar—Maccar Truck Co.
L, 1½-ton 2750
L, 2½-ton 3300
M, 3½-ton 4100
U, 5½-ton 5000

Mack—International Motor Co.
1-ton 2400
1½-ton 2800
2-ton 3000
3½-ton 4600
5½-ton 5250
7½-ton 5500

Manly—O'Connell-Manly Truck Co.
30, 1½-ton 2050
40, 2-ton 2350
50, 2½-ton 2800
60, 3-ton 3150

Master—Master Trucks, Inc.
Junior, 1½-ton .. 1990
M, 2-ton 2390
O, 2-ton long w. b. 2490
W, 2-ton worm drive 2590
WL, 2-ton worm drive, long w. b. 2690

Maxwell—Maxwell Motor Co., Inc.
1½-ton 1085

Maker & Model	Price
Menominee—Menominee Motor Truck Co.	
1-ton	$1890
H, 1½-ton	2475
D, 2-ton	2950
G, 3½-ton	3880
J, 5-ton	4950
Midland—Midland Motor Car & Truck Co.	
MT, 2-ton	3000
MS, 2½-ton	3150
Moreland—Moreland Motor Truck Co.	
1-ton	2175
1½-ton	2930
2½-ton	3775
4-ton	4850
5-ton	5250
Muskegon—Muskegon Engine Co.	
20, 2-ton	2325
Myers—E. A. Myers Co.	
50, 1-ton	1495
55, 1-ton	1460
70, 1½-ton	1750
75, 1½-ton	1700
Napoleon—Napoleon Motors Co.	
1-ton	1285
Nash—Nash Motors Co.	
2018, 1-ton	1650
3018, 2-ton	2175
Quad, 2-ton	3250
Netco—New England Truck Co.	
D, 2-ton	3000
H, 2½-ton	3200
New York—Tegetmeier & Riepe Co.	
M, 1½-ton	2600
N, 2-ton	2800
Noble—Noble Motor Truck Corp.	
NW, 2½-ton	2675
NW4, 4-ton	3750
Northwestern—Starr Carriage Co.	
W2, 2-ton	2950
Norwalk—Norwalk Motor Car Co.	
1-ton	1495
1½-ton	1750
OK.—Oklahoma Auto Mfg. Co.	
1½T2, 1½-ton	2250
2T2, 2-ton	2450
3T2, 3-ton	2985
Old Hickory—Kentucky Wagon Mfg. Co.	
4500 lb.	995
Old Reliable—Old Reliable Motor Truck Co.	
1½-ton Worm	2350
2½-ton Worm	3250
3½-ton Worm	4000
2-3-ton Chain	3250
5-ton Worm	5000
7-ton Chain	6000
Oneida—Oneida Motor Truck Co.	
A, 1-ton	2290
B, 1½-ton	2650
C, 2-ton	3000
D, 3½-ton	3700
E, 5-ton	4750
Oshkosh—Oshkosh Motor Truck Mfg. Co.	
Oshkosh—Willys-Overland, Inc.	
2-ton	3500
Overland—Willys-Overland, Inc.	
800 lb. Panel	1000
800 lb. Express	985
1200 lb. Express	1075
Packard—Packard Motor Car Co.	
1E ½-ton	2650
1½E, 2-ton	3000
1½E, 2-ton	3000
2E, 2½-ton	3400
3E, 3½-ton	4100
4E	4450
5E, 5½-ton	5150
6E	5400
Paige—Paige-Detroit Motor Car Co.	
50-18, 2-ton	2950
Palmer—Palmer-Meyer Motor Car Co.	
1-ton	1685
2-ton	2495

Maker & Model	Price
Panhard—Panhard Motors Co.	
1-ton	$1195
1½-ton	1395
Parker—Parker Motor Truck Co.	
2-ton	3150
3-ton	3700
4-ton	4250
5-ton	5000
Patrolt—Hebb Motors Co.	
1½-ton	2150
2½-ton	3150
Peerless—Peerless Motor Car Co.	
3-ton	4125
4-ton	4150
5-ton	4700
Pierce-Arrow—Pierce-Arrow Motor Car Co.	
2-ton	3750
5-ton	5500
Rainier—Rainier Motor Corp.	
R5, 1000 lb.	1250
R2, 1500 lb.	1350
R4, 2500 lb.	1595
R6, 3000 lb.	1890
Rennoc—Rennoc-Leslie Motor Co.	
2½-ton	2895
Reo—Reo Motor Car Co.	
1500 lb.	1250
Republic—Republic Motor Truck Co., Inc.	
Dispatch, 1500 lb.	1095
Sp., 2000 lb.	1295
10X, 1-ton	1535
11X, 1½-ton	1885
12, 2-ton	2275
T, 3½-ton	3450
V, 5-ton	4750
Reya—Reya Co.	
A-18, 1500 lb.	995
Riker—Locomobile Co. of America.	
3-ton	4600
4-ton	4700
Rowe—Rowe Motor Mfg. Co.	
2-ton	3000
2½-ton	3250
GW, 3-ton	4500
3½-ton	3800
5-ton	4900
Royal—Royal Motor Truck Co. of N. Y.	
1-ton	2400
1½-ton	2800
2-ton	3200
2½-ton	3500
3½-ton	4200
5-ton	5000
6-ton	5400
7-ton	6500
Rush—Rush Motors Corp.	
F, 1000 lb.	895
Sandow—Sandow Motor Truck Co.	
G, 1-ton	2050
CG, 1¼-ton	2250
H, 1½-ton	2550
J, 2½-ton	3250
K, 3½-ton	4250
L, 5-ton	4950
Sanford—Sanford Motor Truck Co.	
W25, 2½-ton	3000
W35, 3½-ton	3975
W50, 5-ton	4750
Schacht—G. A. Schacht Motor Truck Co.	
2-ton	3150
2½-ton	3500
3½-ton	3950
5-ton	4950
Schwartz—Schwartz Motor Truck Co.	
1½-ton	2000
2½-ton	2500
Selden—Selden Motor Vehicle Co.	
TXR, 1-ton	2000
TWL, 1-ton	2200
JCB, 2-ton	2850
JWB, 2-ton	3050
NL, 3½-ton	3850
DL, 5-ton	5000

Maker & Model	Price
Service—Service Motor Truck Co.	
220, 1-ton	$2100
240, 2-ton	3000
270, 3½-ton	3900
275, 3½-ton sp.	4200
300, 5-ton	5000
Signal—Signal Motor Truck Co.	
F, ¼-ton	2400
H, 1½-ton	2700
J, 2½-ton	3100
JL, 2½-ton long w. b.	3175
M, 4-ton	4100
ML, 4-ton long w. b.	4200
R, 5-ton	5100
Standard—Standard Motor Truck Co.	
70, 2-ton	2800
65, 3½-ton	3675
85, 5-ton	4650
Sterling—Sterling Motor Truck Co.	
2½-ton	3300
3½-ton	4325
5-ton	5100
7-ton	5600
Stewart—Stewart Motor Corp.	
6, 1500 lb.	950
8, 1-ton	1575
9, 1½-ton	1975
7, 2-ton	2575
10, 3½-ton	3500
Studebaker—Studebaker Corp.	
SF, 1000 lb.	1045
1-ton	1400
Sullivan—Sullivan Motor Truck Corp.	
F, 1½-ton	2350
E, 2-ton	2850
Superior—Superior Motor Truck Co.	
A, 1-ton	1600
C, 2-ton	2200
Texan—Texas Motor Car Assn.	
½-ton	1100
1½-ton	1525
Tiffin—Tiffin Wagon Co.	
A, 1500 lb.	1100
GW, 1½-ton	2125
MW, 2½-ton	2850
PW, 3½-ton	3760
RW, 5-ton	5000
SW, 6-ton	5200
Titan—Titan Truck Co.	
3½-ton	4300
5-6-ton	5150
Tower—Tower Motor Truck Co.	
F, 2-ton	2975
G, 3½-ton	4100
Trabold—Trabold Truck Mfg. Co.	
TJ, 1-ton	1200
Traffic—Traffic Motor Truck Corp.	
4000 lb.	1395
Transport—Transport Truck Co.	
50, 2½-ton	2585
Triangle—Triangle Motor Truck Co.	
1½-ton	2185
2-ton	2850
Twin City Four Wheel Drive—Twin City 4 Wheel Drive Co., Inc.	
B, 3½-ton	4750
A, 5-ton	5250
Union—Union Motor Truck Co.	
BM, 2½-ton	2375
4-ton	3500
United—United Motors Co.	
1½-ton	2625
2½-ton	3335
3½-ton	3950
5-ton	4750
U. S.—United States Motor Truck Co.	
E, 2½-ton	2800
H, 2½-ton	3250
D, 3½-ton	3500
J, 3½-ton	3950
K, 5-ton	4850

Maker & Model	Price
Universal—Universal Service Co.	
1½-ton	$2000
3-ton	3400
3½-ton	3800
Velie—Velie Motor Corp.	
24, ¾-ton Special	1700
25B, 2-ton	2950
26B, 3½-ton	3900
Viall—Viall Motor Car Co.	
2-ton	2500
Vim—Vim Motor Truck Co.	
1000 lb.	945
25, 1-ton	2195
26, ¾-ton	1200
22, 2-ton	3150
23, 3-ton	3950
Walter—Walter Motor Truck Co.	
5-ton four wheel drive	5500
Ward La France—Ward La France Truck Co., Inc.	
2A, 2-ton	3500
Wayne—Automobile Mfg. & Eng. Co.	
A, 1-ton	1850
B, 2-ton	2900
C, 3½-ton	4100
D, 5-ton	5000
Western—Western Truck Mfg. Co.	
7-ton	5700
White—White Motor Co.	
GBBE, 1500 lb.	2300
TBC, 1½-2-ton	3300
TJ, 3-ton	4100
TG, 5-ton	5000
White Hickory—White Hickory Wagon Mfg. Co.	
F, 1-ton	2000
H, 1½-ton	2400
Wichita—Wichita Falls Motor Co.	
A, 1-ton	1850
K, 1-ton	2000
L, 1½-ton	2350
B, 2-ton	2500
R, 2½-ton	2950
O, 3½-ton	3750
Q, 5-ton	4600
S, 6-ton	5400
Wilcox—H. E. Wilcox Motor Co.	
A, 1-ton	2100
X, 1½-ton	2775
Q, 2½-ton	3250
P, 3½-ton	3950
W, 5-ton	5000
Wilson—J. C. Wilson Co.	
1-ton	1750
2-ton	2800
3½-ton	3800
5-ton	4600
Winther—Winther Motor Truck Co.	
38, 1½-ton	2250
48, 2-ton	3000
68, 3-ton	3800
88, 4-ton	4200
108, 5-ton	5000
128, 6-ton	5250
148, 7-ton	5500
Wisconsin—Myers Machine Co.	
B, 1½-ton	1750
C, 2½-ton	2500
E, 5-ton	5000
Witt-Will—Witt-Will Co., Inc.	
WD, 2-ton	2850
Wolverine—American Commercial Car Co.	
C, 1½-ton	2180

GAS-ELECTRIC TRUCK-TRACTORS

Couple Gear—Couple Gear Freight Wheel Co.	
5-7-ton	6100-6200
7-10-ton	6600-6800
10-15-ton	7300-7450

Maker & Model	Price
GASOLINE TRUCK-TRACTORS	
Columbia—Columbia Motor Truck & Trailer Co.	
6-ton sh. w. b.	$2350
Federal—Federal Motor Truck Co.	
3-ton	2500
7-ton	3475
Garford—Garford Motor Truck Co.	
70B, 4½-ton	3400
77, 7-ton	4400
68, 10-ton	5100
Knox—Knox Motors Co.	
35	5500
36	6000
Koehler—H. J. Koehler Motors Corp.	
KT, 3-ton	1750
LT, 5-ton	2165
Kuhn—Kuhn Tractor Truck Co.	
5-ton	5000
5-ton dual drive	5500
Master—Master Trucks, Inc.	
6-ton	2650
Rennoc—Rennoc-Leslie Motor Co.	
8-ton	2895
Ross—Ross Motors, Ltd.	
3-ton Utility	1850
Watson—Watson Wagon Co.	
5-ton	4050
ELECTRIC TRUCK-TRACTORS	
Couple Gear—Couple Gear Freight Wheel Co.	
5-7-ton	4750-4850
7-10-ton	5250-5350
10-15-ton	5900-6000
ELECTRIC COMMERCIAL	
Atlantic—Atlantic Electric Vehicle Co.	
1-ton	3100
2-ton	3787
3½-ton	4506.25
5-ton	5100
6-ton	6437.50
6½-ton	6590
C. T.—Commercial Truck Co. of America	
½-ton	1750
1-ton	2100
2-ton	2500
3½-ton	3650
5-ton	4150
Couple Gear—Couple Gear Freight Wheel Co.	
3½-ton Chassis	4750
5-ton Chassis	5250
7-ton Chassis	5900
Lansden—Lansden Co., Inc.	
1000 lb. Chassis	1815
2000 lb. Chassis	2090
4000 lb. Chassis	2585
7000 lb. Chassis	3025
10,000 lb. Chassis	3465
Walker—Walker Vehicle Co.	
M, 1000 lb.	1850
K, 1-ton	2300
L, 2-ton	2600
P, 3½-ton	3600
N, 5-ton	3900
5, 10-ton tractor	3700
7, 15-ton tractor	5000
Ward—Ward Motor Vehicle Co.	
WS, 750 lb.	1100
WA, 1000 lb.	1600
WB, 1-ton	2100
WD, 2-ton	2600
WF, 3½-ton	3200
WH, 5-ton	4000

GAS-ELECTRIC COMMERCIAL

Couple Gear—Couple Gear Freight Wheel Co.	
3½-ton	6100
5-ton	6700
7-ton	7350

Rural Express Means Better Food and Good Roads

EDITORIALS

England Learning From America How to Export

IS America really so far behind other countries, such as Germany and England, in its methods of exporting? We read much in regard to the very thorough-going methods of the Germans. We also are prone to believe that the Englishman, especially in exporting to parts of the British Empire in other parts of the world, is ahead of us. We read, however, in the *Motor Export Trader,* an English trade paper, that England should take a lesson from the American exporter in his methods of doing business on commercial cars with Australia. For instance, this paper says "America has practically captured the Australian motor trade by offering a completely equipped vehicle backed by a properly organized sales campaign and excellent service."

A contrast is then drawn between the American methods of supplying her products to the representatives in Australia, while the English firm turns down a request for any replacement, merely because the damaged part was not shipped to them with the charges prepaid. At the same time, it is stated that the Australians have a preference for British goods, not because the goods are superior, but merely because of his blood relation.

England has been handicapped during the period of the war, while America has been getting some of this trade. It is thought in England that even yet the English can regain the lost ground if they handle the exports in an up-to-date manner, referring to the American methods. The American manufacturer is wise, they say. He realizes that if he keeps an ample supply of "spares" at central depots in Australia, the running cost of his make of car must necessarily be much lower than that of a car for which no supply of spare parts is obtainable. Not infrequently crankshafts, connecting rods, etc., have to be made to replace broken or defective parts for which the owner might have to wait months because the manufacturers did not keep a supply of parts in Australia. The article then goes on to state that it is bad enough to have a passenger car laid up awaiting spare parts, but it is infinitely worse to have to lay up a commercial vehicle. It is the man on the spot with the goods who gets the business. Hitherto the English maker could not compete on a quantity production basis, but he can compete on the basis of service and quality.

These facts from the English publication are very illuminating. Is the American as far ahead as the English publication says he is? Are American manufacturers educating their foreign buyers? Are they giving stocks of spare parts on consignment? Are they giving service which means so much in exports where mails are slow and hold-ups are long?

It is to be hoped that the American manufacturer of trucks will live up to the reputation which he apparently enjoys in England. Australia is, of course, but one of the coming markets for our goods, but in this, as in others, the American manufacturer will find that European makers have learned many things during the war, which will make their competition more difficult for us to overcome.

Labor

IT is quite possible to have every citizen of this great country amply supplied with food and clothing and properly sheltered; but since there are those who cannot care for themselves, it would seem to be in the nature of wisdom and justice that those who have the ability to place themselves in the minority class should also have the vision and heart to give a portion of their energy and wealth to protect the unfortunate in the majority class.

With a full realization of the terrible cost of the war, most of us have tried to get consolation out of the fact that the moral advancement of mankind will compensate for the losses sustained. Some of us probably believe this; others are skeptical, but we are all aware that we are facing new conditions which require the best that is in us to prevent catastrophe following catastrophe.

The wonderful resources of this country cannot help but make us all feel optimistic for the future, and there seems to be but one disturbing factor in our program for the future greatness—labor. Admitting that this is our most serious problem, why endeavor to temporize with it? Why not approach it in a fair spirit of comradeship and use the best that is in us to see that we deal with labor so fairly that what seems to be a problem in reality will be nothing more than an interesting element in our economic life which we can handle intelligently and satisfactorily.

We do not want Bolshevism in this country and there is no need for us to have it, provided the small minority of men with ability, position and capacity to determine the future policies of this great Nation utilize the great forces they have in dealing broadly and constructively with the labor problem, so that every man who is willing to work will be able to amply feed and clothe his family.

If we are willing to make the sacrifice which will be required to devote our thought, some of our time, some of our money, to seeing that mankind is properly cared for, we need not worry about the future.

Army Trucks May be Used by Parcel Post System if Sufficient Truck Funds Are Available

THE 18,000 or 20,000 army trucks which are now standing idle in various parts of the United States at cantonments can be used at once by the Parcel Post and Rural Express Routes, according to 4th Asst. Postmaster Blakslee, provided sufficient funds for the establishment and operation of these routes is voted by Congress.

Here is an enormous equipment costing hundreds of thousands of dollars which is not turning a wheel and which is greatly needed at once in this progressive department of the Government. The only reason that the trucks are not now working and giving employment to the returning soldiers and carrying food from farming sections of the country not previously served, is because Congress will not appropriate sufficient funds.

It is of vital interest to the commercial car industry that these trucks be put into service as soon as possible instead of being sold on the market at comparatively low figures. In the latter case they would "bear" the market.

Here is one department of the Government which can make use of these machines at once, but would probably have to wait many years to obtain such truck equipment if they had to wait for the trucks to be made and purchased by the Government. The trucks are already in existence; why not use them.

It is apparently the duty of every man connected with the commercial car industry to see to it that pressure is brought to bear on the representative of his section in Congress to vote for a sufficient appropriation for the rural express and parcel post work, that trucks may be put into operation as soon as possible. It is a crime that this valuable equipment stand deteriorating and exposed to the weather or be put on the market at prices which would damage the truck industry.

Write or wire your congressman.

The Combination New York and Chicago Show Number

THE next issue of THE COMMERCIAL CAR JOURNAL, should be of great interest to our readers, for it will not only contain the Western half of our Truck Review, which describes and illustrates the various trucks made in the western half of the United States, but it will also contain detailed information of both the New York and the Chicago Truck Shows.

As there have been no truck shows for a number of years, the shows at New York and Chicago will be of special interest. Although they are not national shows, still they will be representative of the industry, and the things which are to be featured there will indicate the progress which has been made during the war.

As these are the only Truck Review numbers which contain photographs of all the machines, they will be held as reference books for the year and will be very valuable as a means of comparison.

Truck Spaces Allotted for Chicago Show

CHICAGO, Jan. 2.—A meeting for allotment of spaces for motor trucks at the Chicago show was held last week. The motor truck exhibit will be held February 3-6.

Samuel A. Miles, who is managing the show, is delighted with the progress already made. Many more applications for space are expected.

Choice of space in the allotment was based on production up to the end of 1917.

The commercial cars which were allotted space in the original drawing for the motor truck exhibition are as follows: Garford, G. M. C., Walden W. Shaw, Federal, Indiana, Reo, Clydesdale, Bethlehem, Republic, Dearborn, Pierce-Arrow, Nash, Velie, Four Wheel Drive, Chevrolet, Lapeer, Dodge, Maxwell, Locomobile, Autocar, Master, Service, Paige, Kissel, Walker, Brockway, Acme and Gary.

The show will be in the nature of a "victory celebration" because of the end of the Great War and because of the gigantic part played in it by the automobile industry.

Decorations for the mammoth buildings are now being completed at the Evergreen Park studios and installment will be under the supervision of L. L. Fest.

Senate Eliminates Taxes on Trucks and Truck Parts

WASHINGTON, Dec. 26.—In passing the Revenue Bill last night, members of the Senate were convinced of the unfairness in placing a 5 per cent. tax on trucks, tractors, trailers and parts therefor, and they were eliminated, leaving proposed taxes of 5 per cent. on the sale of passenger cars by the manufacturers, and 5 per cent. on the sale of tires, tubes, parts and accessories for passenger cars. The vote was 33 to 28.

The Bill now goes to the Conference Committee of the Senate and the House, which is expected to promptly supply a compromise measure which it is hoped will not change the above action.

Comet Making Trucks for Export

DECATUR, ILL., Jan. 4.—Comet Automobile Co., which has been engaged in the manufacture of motor trucks for some months, has received an order for 75 2-ton trucks from Switzerland and one for twenty-five 2-ton trucks from Italy. The Comet plant is now resuming quantity production and is in receipt of an unexpectedly large number of orders from foreign countries. All government contracts were completed prior to the first of the year and the capacity of the plant will be tested to keep pace with the calls from the foreign field.

Detroit Office for Hart-Parr

DETROIT, Dec. 15.—Hart-Parr Co., of Charles City, Ia., has established an office at 454 Book Bldg., Detroit, to promote the sale of truck wheels and offer engineering service in designing and developing steel wheels for motor trucks.

Who's Who in Washington Reconstructive Work

Organization of Government Committees With Which the Automotive Industry is Concerned

Council of National Defense

Secretary of War, Chairman.
Secretary of Navy.
Secretary of Interior.
Secretary of Agriculture.
Secretary of Commerce.
Secretary of Labor.
Grosvenor B. Clarkson, Director.

Advisory Commission

Daniel Willard, President, B. & O. R. R., Chairman.
Howard E. Coffin, vice president, Hudson Motor Car Co.
Julius Rosenwald, president, Sears, Roebuck Co.
B. M. Baruch, banker.
Dr. Hollis Godfrey, president, Drexel Institute.
Samuel Gompers, president, American Federation of Labor.
Dr. Franklin Martin, Secretary of Gen. American College of Surgery.
Walter S. Gifford, Director.
Grosvenor B. Clarkson, Secretary.

National Automobile Chamber of Commerce

Second National Bank Building, 509 Seventh St.

Hugh Chalmers, Vice-President of the N. A. C. C., is acting as Washington representative of the N. A. C. C. members. A staff consisting principally of engineers is assisting Mr. Chalmers in giving information to automobile manufacturers in connection with Government work. Alfred Reeves, Gen. Mgr. of the N. A. C. C., spends a large part of his time in Washington, in connection with the various interests of the automobile industry.

Highways Transport Committee

944 Munsey Bldg.

This committee was appointed by the Council of National Defense, to assist in making most efficient use of highways as one of the means of strengthening the Nation's transportation resources. The most important policies thus far adopted are: (1) To increase highways transport resources, and curtail waste by eliminating the running of vehicles empty. Return Load Bureaus have been established for this purpose. (2) To make more food available and save farm labor for work on farms. Rural Motor Truck Express routes for agricultural areas to consuming centers or important shipping points are advocated. (3) To make highway transportation more economical and effective by encouraging the use of power driven vehicles. (4) To assist the Railroad Administration in the elimination of the terminal congestion.

John S. Cravens.
G. H. Pride.
H. G. Shirley.
R. C. Hargreaves, Secretary.

Advisory to Highways Transport Committee

Raymond Beck.
Thomas D. Knight.
C. A. Musselman.
C. W. Reid.
Lee Lamar Robinson.

Motor Truck Committee of the N. A. C. C.

This Committee was organized for the purpose of co-operating with the Highways Transport Committee, in matters pertaining to motor truck haulage, and to give to builders of motor trucks of the United States such assistance as they may call for. It carries the authority of the N. A. C. C.

George M. Graham, Chairman.
W. T. White.
M. L. Pulcher.
David Ludlum.
D. C. Fenner.
S. A. Miles, in charge of rural motor delivery feature of the committee's activities.

Motors Division, Quartermaster Corps

This division procures motorized vehicles for the Motor Transport Corps.

Col. Fred Glover, Chief.
Maj. Guy Hutchinson, Executive Officer.
Col. E. S. George, Assistant Chief.
Maj. A. H. Zacharias, Production Assistant.
Maj. C. S. Dahlquist, Technical Assistant.

Procurement Branch

Maj. A. H. Browne, A and B trucks.
Capt. A. C. Keleher, Militor trucks.
Maj. W. T. Fishleigh, AA trucks, ambulances, automobiles.
Maj. R. Miller, Jr., special vehicles, motorcycles, bicycles.
Guy Morgan, spare parts, accessories, tires.
James Morrison, bodies.
Lt. W. J. Kennedy, orders.
D. F. Hess, priorities.
Capt. E. P. Hangliter, gauges.

Administrative Branch

Capt. S. P. Dean, Chief.
Capt. A. D. Stansell, Office Control.
W. A. Dickey, Personnel.
D. G. Blair, Clearances.
A. G. Drefs, Finance and Statistics.
Capt. H. M. Lowy, Trucks.

District Offices

Maj. M. B. Edgerton, Chicago.
Capt. D. S. Devore, Cleveland.
Maj. E. L. Jaco, New York.
Maj. G. D. Wilcox, Detroit.

Motor Transport Corps

Seventh and B Sts.

This Division has charge of engineering, operation and maintenance of all motor vehicles except tanks, caterpillars and other artillery tractors, for all divisions of the United States Army in this country, as well as overseas. Also supervises maintenance, operation and inspection of motor-driven vehicles, motor repair shops and garages.

Brig. Gen. C. B. Drake, Director.
Col. J. F. Furlow, Asst. Director.
Col. C. Seamon, Asst. Director.
Col. W. H. Noble, Asst. Director.

United States Railroad Administration

Regional Directors:

A. H. Smith, Eastern Territory, Grand Central Terminal, New York City.
N. D. Maher, Pocahontas Region, Roanoke, Va.
B. L. Winchell, Southern Division, Healey Bldg., Atlanta, Ga.
R. H. Aishton, Northwestern Territory, 226 W. Jackson Blvd., Chicago, Ill.

Division of Capital Expenditure, United States Railroad Administration

Robert S. Lovett, Director.

United States Employment Service, Department of Labor

Main Office, 916 16th St., N. W., Washington, D. C.

John B. Dinsmore, General Director.
C. T. Clayton, Asst. Gen. Dir.
N. A. Smyth, Act. Asst. Dir. Gen., Sec. of Policies and Planning Board, Chief Common Labor Section.
T. B. Powderly, Chief, Division of Information, Administration and Clearance.
M. A. Coykendall, Chief, Division of Farm Service.
W. E. Hall, Chief and National Director of Public Service Reserve and Boys' Working Reserve.
R. W. Babson, Chief, Division Inquiry and Education.
I. W. Litchfield, Chief, Clearance Section (Skilled Labor).
S. W. Mason, Chief Clerk.
James L. Hughes, Asst. to Dir. Gen.

District Superintendents

District 1—H. A. Stevens, 53 Canal St., Boston, Mass.
District 2—J. R. O'Leary, 22 E. 22nd St., New York City.
District 3—J. C. Saylor, Old Federal Bldg., Wilmington, Del.
District 4—J. W. Reynolds, Cleveland, Ohio.
District 5—Ralph Izard, 810 E. Main St., Richmond, Va.
District 6—Cliff Williams, Meridan, Miss.
District 7—P. L. Prentis, 116 N. Dearborn St., Chicago, Ill.
District 8—C. C. Kavanaugh, Little Rock, Ark.
District 9—James O'Rilly, 406 Metropolitan Life Bldg., Minneapolis, Minn.
District 10—A. L. Barkman, Kansas City, Kans.
District 11—H. W. Lewis, Smithville, Texas.
District 12—W. T. Boyce, Claus Spreckles Bldg., San Francisco, Cal.
District 13—E. C. Snyder, First Ave. and Main St., Seattle, Wash.

Ohio Road Congress is National in Its Constructive Program

COLUMBUS, Jan. 14.—One of the most important post-war gatherings in the country is the second annual session of the Ohio Road Congress, held in Columbus, January 14, 15 and 16. Nominally a state gathering, it is really of national scope, for the speakers come from all parts of the United States and the topics discussed all have a national application and interest. The organizations holding their annual meetings during the session are as follows:

Ohio Good Roads Federation, Ohio Engineering Society, County Commissioners' Association of Ohio. Co-operating with these societies in the three days' session are the State Highway Department, State Agricultural Department, Ohio State University, Ohio State Grange, State Postmasters' Association, Ohio Chambers of Commerce, State Highways Transport Committee, Council of National Defense, Ohio Automobile Trade Association, Ohio State Automobile Association and several road building and material state associations.

Among the speakers will be James I. Blakslee, fourth assistant postmaster-general of the United States, who will speak on the extension of rural motor parcel post routes; George M. Graham, chairman, motor truck committee National Automobile Chamber of Commerce; George Diehl, chairman; good roads board A. A. A.; S. M. Williams, president, Highways Industries Association; E. D. Williams, chief engineer of roads, West Virginia; B. A. Gramm, who will talk of Class B military trucks; A. E. Mitzel, president of the Ohio Automobile Trade Association; Judge Walter D. Meals, of Cleveland, president of the Ohio Automobile Association; Royal B. Scott, secretary of the Willys-Overland Co., and L. J. Tabor, master of the Ohio State Grange.

The program is arranged under various sections, which will meet in three different meeting places.

One of the most important of these sectional meetings will be held by the automobile and motor truck interests. The most important subject for discussion, aside from good roads, will be the matter of legislation. An effort is now being made in Ohio by certain political interests to shoulder the automobiles and motor trucks of the state with the millions of dollars taxes which the liquor interests now pay, but which come to an end next May, when the state goes dry. State automobile licenses yielded $2,160,370 last year in Ohio, and those who are trying to saddle the auto interests with an unfair percentage of tax burdens say they ought to yield $8,000,000.

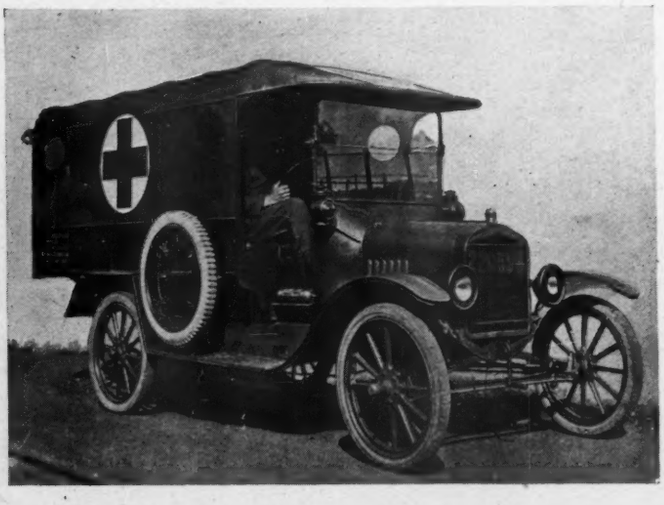
Such vicious legislation as this will be very vigorously fought all along the line.

Ohio motorists, both owners of passenger cars and of commercial trucks, would like very much to see uniform automotive legislation throughout the United States, administered the same in each state and with fairness both to owners and to the commonwealth at large.

Bosch Magneto Sold

A. Mitchell Palmer, alien property custodian, has sold the Bosch Magneto Co., of Springfield, Mass., to H. C. Griffiths, of New York City. The price bid was $4,150,000. There was only one other bidder, Harry C. Fiske, of Springfield, Mass., treasurer of the Fiske Rubber Co., of Chicopee Falls, Mass. The sale includes the entire capital stock, patents, plant and complete equipment. The new purchaser has offices at 220 Fifth Ave., New. York City. He declared that he purchased the plant for himself and would continue the operation of the company along the same lines as it is at present engaged in and said that he did not represent any financial interests other than his own.

The company's plant was seized in April and has since been operated by the Government and its entire output has been used for army purposes. The company's plant in Plainfield, N. J., also seized by the Government, was sold last July to the Wright-Martin Aircraft Corporation, of New Brunswick, N. J.



American Red Cross Ambulance

American ambulance which brought the first patient to the New Dartford Hospital, opened by the American Army Medical Corps, in the outskirts of a little English village eighteen miles from London, for wounded Americans from the war zone in France. There are now more than eight hundred Americans there. The first patient was a young aviator, injured in a crash, after a long battle over the German lines.

Harry Newman to Make Trucks

ST. LOUIS, Jan. 4.—Harry Newman, Inc., widely known as a distributor of trucks, trailers and tractors, has completed arrangements for the manufacture of a truck, to be known as the Pioneer. A complete line of five sizes will be manufactured, ranging from 1 to 5-ton capacity. The truck will be assembled from standard units, Timken-Detroit worm drive rear axle, Stromberg carburetor, Borg & Beck clutch and Continental engine being some of the parts included in the assembly.

Prices of the models will be as follows: 1-ton, $1590; 1½-ton, $1890; 2-ton, $2290; 3½-ton, $3290, and 5-ton, $4190.

Connecticut Telephone & Electric Has New Sales Promotion Manager

MERIDEN, CONN., Dec. 30.—In line with its new and more aggressive advertising policy, the Connecticut Telephone & Electric Co., of this city, has secured the services of O. H. Adams as sales promotion manager. Mr. Adams enters upon his duties today. He will handle all branches of advertising and work with the sales department in developing of sales of the company's various lines of manufacture.

Federal Now the John Nicol Co.

CHICAGO, Jan. 2.—Federal Truck Co. has changed its name to the John Nicol Co. The Nicol brothers, John, president, and Grant, vice-president and sales manager, still control the affairs and stock of the company and the change of name is simply to capitalize the personal reputation of the brothers.

Perfection Roller Bearing Co. has been formed in Chicago, and will place on the market new types of roller bearings, among them a non-lubricant bearing for installation on badly worn Ford rear axles. C. M. Carr, a former automobile trade publisher, is president of the company; Wm. R. Bullion, formerly with the Elgin Motor Car Co., is secretary. The factory of the company is at Englewood, while the offices are located at 117 N. Dearborn St., Chicago. The company expects to exhibit at the Milwaukee and Chicago shows. A catalog line for replacement work will eventually be sold through jobbers to repair shops and garages.

Accurate Cost Records Spell Efficiency in the Operation of a Large Fleet of Trucks

Southern New England Telephone Company Evolves System Which Checks Waste and Makes For Efficient Operation. Depreciation Accurately Estimated

By C. P. SHATTUCK

THE supervision of a large fleet of mixed automobiles, passenger and commercial, is not an easy task even when the cars are operated from and maintained at a central station. But when the machines are scattered over an entire State it is obvious that the cost and accounting system must be worked out very carefully to obtain efficiency from the units, particularly when the results obtained are passed upon by a critical board of directors who have the cost figures of previous years at their command.

The Southern New England Telephone Co., operating a fleet of 161 machines for constructing and maintaining its service, has evolved a system having a number of very commendable features. It not only provides means for checking waste and inefficient operation of the trucks, but it affords Supervisor of Motor Vehicles Robert Hunter means for quickly determining any desired information as to the location of the cars, their utility, cost, life, etc.

The Derrick in Position and Being Used to Lower Manhole Into Place.

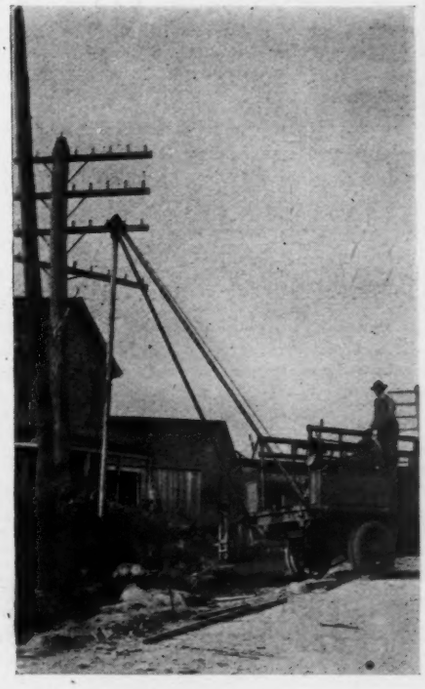
Serve Five Thousand Square Miles

The company serves the entire State of Connecticut, which has an area of nearly 5,000 square miles and a coast line of 100 miles. Its lines radiate from the cities and towns in such manner that nearly 700 communities are linked up and a large number of rural districts served, a system involving considerable detail not only in maintaining the service but accounting for the work, costs, etc., of each truck.

The central offices of the company are located at New Haven, from which place Supervisor Hunter looks after the cars, aided by an assistant, who maintains the records, forms, etc. The trucks are distributed and operated in what is known as areas, each having an exchange number. This number or reference figure is the basis of the daily report and charges made against the passenger car or truck. The daily automobile report serves as a driver's report, also provides the superintendent's office with a record of the work of the car, fuel and oil used, miles operated, hours used, hours disabled, etc.

Charged up to Car and Work

This daily report, as well as the others, is like a cog in a wheel of the train of gears operating the system, for it should be explained that many of the items check each other and that the cost of the truck or car is charged up to the construction and maintenance of the area or exchange. These figures, finding as they do their way into a number of reports and accounts, check one another. For example: The gasoline and oil supply of the trucks and cars is renewed nightly at the garages by the night men. The fuel and oil is charged against the garage and the amounts used by the various cars is credited to the garage. The amounts must balance; if not, an investigation is made. In the smaller places where the trouble men house their own machines; that is, in the rural districts, the driver is supplied with a tank, the renewal of the contents of which is charged to him. He turns in a daily slip as do the other drivers. There is no "joy riding" with



Making Ready to Set a Pole

10M-7-12-1915

DAILY AUTOMOBILE REPORT

THE SO. NEW ENG. TEL. CO. _____ 191

CAR NUMBER _____ MAKE OF CAR _____ STATION _____

MILES RUN	HOURS USED	GALLONS GASOLINE USED	HOURS DISABLED	OPERATED BY	REMARKS

RECORD OF CHARGES FOR USE OF CAR (HOURS)

AREA																				
WORK ORDER																				
ACCOUNT																				
HOURS																				

Daily Report Indicating Service, Fuel, Oil, Etc. It is a Driver's Report and Constitutes a Record of Charges Against the Car.

the passenger cars at the company's expense, and use of the machine with the driver supplying the fuel and oil may be probable, but rarely if ever occurs, as a system of tire checking is employed that would create considerable trouble for the joy rider.

Monthly Report Made of Car

The daily report comes to headquarters every day. That is insisted upon and the rule observed. There are two interests demanding this report, the motor truck department and that having to do with the costs of the construction or other work in the particular area or exchange. As may be noted, the record for charges includes the work order issued, and the account and hours with which the truck department has nothing to do. There is a separate monthly report for each car, and provision is made among other things for accounting for the daily mileage, hours used, hours not in service, operator, fuel and oil supplied or purchased, etc. The monthly figures are then transferred to what is termed the monthly analysis for the year, as shown by the form accompanying this article.

One Form Includes All Costs, Etc.

One of these forms is devoted to each machine and provides for the recording of operating record, operating cost, other expenses and average costs, although the last named is not now in use, even though the costs are compiled. Under the head of operating cost, which is subdivided, is the condensed data of the daily report and that dealing with the average miles per gallon of fuel and monthly average. Now these records are of extreme value. If it be found that the car has been disabled or not in use for a certain period, an investigation can be made to determine the cause. It may be that a certain area is behind in its work, that the partial service of another car could be utilized. If a machine nearby is not being operated or worked efficiently, it is possible to use it part of the time. Any transfer, of course, would show on the daily report.

Tabulating Operating Cost

Under the head of operating cost are fuel, lubricants, repairs, routine and accident; tires and tubes and hauling in case of a breakdown. The records are transferred from the daily report to monthly, thence to the annual report. As may be noted, the monthly report contains the average costs, it replacing the average cost section of the annual report. The cost of repairs, routine and accident is obtained from the garage slips, the system for keeping track of this work following conventional practice. Under the head of hauling in case of a breakdown are charged the costs, hours, etc., of any truck or car sent to tow in the damaged machine. The total operating cost per mile is then worked out by considering all these factors and entered.

Referrring once more to the monthly report, it may be noted that in the auditor's record of expense or charges against the car are many conventional charges, such as house service, rent, minor garage charges, depreciation, body repairs, painting, miscellaneous, etc. Every cent of expense is charged up to a car, and certain costs, such as salaries, etc., items sometimes overlooked by the operator of a fleet of trucks, and who is his own supervisor, are included or proportioned. This method is recommended because it obtains exact costs of transportation. The items referred to are transferred to the annual report.

Accurate Record of Tires

The system provides for an accurate record of tires. Two forms, similar in character, are employed, one a slip 5½ x 8½ in., and the other a card of the index type, 5 x 3 in. A detailed explanation of the system can be easily obtained by a study of the forms and, as is obvious, the office has a very complete record of the service of the tire from the time it is placed on a car or carried as a spare. The smaller form is filed in a cabinet for

Form 333

MONTHLY AUTOMOBILE REPORT

5-17-3M

THE SO. NEW. ENG. TEL. CO.

MONTH OF ..... 191.....

CAR NUMBER..... MAKE OF CAR..... STATION.....

DATE	MILES RUN	HOURS USED	GALLONS GASOLINE USED	DAYS DISABLED	OPERATED BY	GASOLINE PLACED IN CAR			REMARKS
						DRAWN		PURCHASED	
						GAL.	TICKET NO.	GAL.	
TOTALS									

CORRECT.....

AUDITOR'S RECORD OF EXPENSE			MONTHLY OPERATING COSTS			OPERATING RECORD	
702-21 S. & W. (AT GARAGE)			AVE. COST GAS PER MILE			NUMBER DAYS IN USE	
702-22 S. & W. (RUNNING CAR)			AVE. COST OIL PER MILE			NUMBER DAYS DISABLED	
702-23 HOUSE SERV. AND RENTS			AVE. COST TIRES PER MILE			AVE. MILES PER GAL. GASOLINE USED	
702-24 GASOLINE			AVE. COST PER DAY IN USE			AVE. DAILY MILEAGE	
702-25 Hauling In Case of Breakdown			AVE. COST PER HOUR			MONTHLY MILEAGE	
702-26 MINOR GARAGE EXPENSES			AVE. COST PER MILE			TOTAL MILES OPERATED TO DATE	
702-27 TIRES AND TUBES							
702-28 REPAIRS, ROUTINE							
702-29 DEPRECIATION							
702-30 MISCELLANEOUS							
702-31 OILS AND GREASE							
702-32 REPAIRS, ACCIDENT							
702-33 REPAIRS TO BODY, PAINTING							
TOTAL OPERATING EXPENSE							

NOTED..... SUPV MOTOR EQUIPMENT

The Monthly Report Includes Detailed Operating Cost as Well as Operating Record of Each Machine. The Auditor's Record Includes Charges Against Car

reference and affords ready means for noting the performance of a shoe. The rules governing the use of tires are rigidly enforced, and a driver or garage must fill out the larger form for each exchange and receipt of new shoes.

Mr. Hunter demonstrated the simplicity of the scheme by asking for the record of a certain tire on a certain car, a request having been made personally for a new shoe. The records showed that the tire had been in service for 500 miles, and an investigation revealed the interesting information that the shoe was unfit for service because of an accident to it. Similarly, it is a simple matter to ascertain the service given in the average of certain makes of tires, solid and pneumatic, information of extreme value to the purchasing agent or supervisor.

Whenever a New Tire is Received or Change Made, Report is Made to Office.

This Tire Record Card is Filed at Office, and is a Check on Tires and Drivers.

Form 564 9-18-2M

TIRE RECORD

THE SO. NEW ENG. TEL. CO. PLANT DEPARTMENT

DATE 191

EXCHANGE	CAR NUMBER				
DATE RECEIVED					
DATE PUT ON					
ODOMETER READING		WHEELS			
MAKE		FRONT		REAR	
TYPE		LEFT	RIGHT	LEFT	RIGHT
SERIAL NUMBER					
SIZE					
CHECK REASON FOR REMOVING TIRE					
UNFIT FOR FURTHER USE: TIRE NO.					
FOR REPAIR : TIRE NO.					

THIS FORM MUST BE SENT TO THE SUPERVISOR OF MOTOR EQUIPMENT, NEW HAVEN,—

(1) IMMEDIATELY UPON RECEIPT OF TIRE, STATING WHETHER IT IS USED OR CARRIED AS SPARE.

(2) EACH TIME THAT A TIRE IS REMOVED OR REPLACED.

(SIGNED)_____

Form 553 4-18-1M

TIRE RECORD CAR NUMBER

EXCHANGE					
DATE RECEIVED					
ORDER NUMBER					
DATE PUT ON					
DATE REMOVED					
ODOMETER READING	OFF				
	ON				
NUMBER MILES RUN					
MAKE					
TYPE		WHEELS			
SERIAL NUMBER		FRONT		REAR	
SIZE		LEFT	RIGHT	LEFT	RIGHT
COST					
DISPOSAL OF TIRE REMOVED					

A Monthly Analysis is Made of the Operating Record, Costs, Etc., and Totals Are Incorporated in the Annual Report.

A Monthly Depreciation Statement is a Feature of System, and Includes Data Valuable in Determining Expected Life of Car, Costs, Salvage Value, Etc.

FORM 663 MONTHLY AUTOMOBILE ANALYSIS YEAR 191 1-1-17-1M

THE SO. NEW ENG. TEL. CO.
PLANT DEPARTMENT

LOCATION _____ COST _____

AUTO. REGISTRATION NO. _____ MAKE OF CAR _____ TYPE _____ DATE IN SERVICE _____

OPERATING RECORD	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
NO. DAYS IN USE													
NO. DAYS DISABLED													
NO. HOURS IN USE													
NO. GALS. GAS. USED													
AVE. MILES PER GAL. GAS.													
AVE. DAILY MILEAGE													
MONTHLY MILEAGE													
TOTAL MILES OPERATED TO DATE													
OPERATING COST													
GASOLINE													
HAULING IN CASE OF BREAKDOWN													
TIRES AND TUBES													
REPAIRS ROUTINE													
OILS AND GREASE													
REPAIRS ACCIDENT													
TOTAL OPERATING COST													
OPERATING COST PER MILE													
OTHER EXPENSES													
S.&W. AT GARAGE													
S.&W. RUNNING CAR													
R.&H. SERVICE													
MINOR GARAGE EXPENSES													
DEPRECIATION													
MISCELLANEOUS													
REPAIRS TO BODY, PAINTING													
TOTAL OTHER EXPENSES													

FORM 663 ACCOUNTING REPORT No. 3

THE SOUTHERN NEW ENGLAND TELEPHONE CO.

MOTOR VEHICLE DEPRECIATION STATEMENT

Date

Number	Make	Cost To Date	Estimated Salvage	Wearing Value	Depreciation To Date	Balance	Monthly Rate of Depreciation	Expected Life From Date

General Auditor

Exchange	Garage Service - New Haven
Car	Ford
Type and Model	Express - T
Factory number	767086
Horse power	22
Cost	$458.00
Date in use	June 11, 1915.
Estimated life	24 Months Salvage value $100.00
Depreciation	
Class of work	Garage Service
Operator	John Smith
Garage	S.N.E.Tel.Co.
Storage	
Washing	
Gasoline	S.N.E.Tel.Co's.Tank
Tires	30 x 3 F. 30 x 3½ R.

When a New Truck or Car is Placed in Service, Complete Details Are Recorded on the Card

The reverse side is utilized when machine is sold and data is record of costs, etc.

Costs—Ford Car No. 1823—New Haven.

Car purchased March 12th, 1913	$583.00
Car sold April 8th, 1915	175.00
	$408.00
S and W at garage	$27.39
S and W running car	.....
House service and rents	254.35
Gasoline	388.63
Hauling case breakdown	.....
Minor garage expense	.....
Tires and tubes	407.93
Repairs—routine	307.72
Depreciation	483.00
Miscellaneous	99.48
Oils and grease	40.40
Repairs—accident	.....
Repairs to body—painting	.....
	$2,008.90
Less depreciation	483.00
	$1,525.90
Net cost of car	408.00
Total actual cost	$1,933.90
Average cost gas per mile	.012
Average cost oil per mile	.001
Average cost tires per mile	.012
Average cost per mile	.06
Average cost per day in use	3.08
Average miles per gal. gas	15.6
Average daily mileage	53.2
Number days in use	627
Number days disabled	14
Number miles run	33,377
Number days in use	627
Number gal. gas used	2216.5

Use is made of code numbers in the accounting system, serial numbers, a separate series being assigned for commercial and passenger cars. The code numbers are made up of four digits, the first digit indicating the type of car. For example: Four represents a commercial and 5 a passenger car. In the commercial type car code numbers the second digit represents the capacity of the car; that is, the maximum load in lbs., as follows:

0 indicates cars of a maximum capacity of 750 lbs.
1 indicates cars of a maximum capacity of 1,000 lbs.
2 indicates cars of a maximum capacity of 1,500 lbs.
3 indicates cars of a maximum capacity of 2,000 lbs.
4 indicates cars of a maximum capacity of 3,000 lbs.
5 indicates cars of a maximum capacity of 6,000 lbs.

In the passenger car type code numbers the second digit represents the make of car as follows:

0 Ford
1 Buick
2 Cadillac
3 Reo
4 Dodge
5 Hupmobile
6 Studebaker

The third and fourth digits represent the car number, numbers running in series from 1 up for all commercial cars of the same capacity or passenger cars of the same make. A brass plate with the assigned numbers is attached in a conspicuous place to each car, but is replaced by a painted number when a car is repainted. Numbers are painted on all new machines. A slip with code number and State license number opposite it provides quick means of identifying any car when a report made from outside contains only the license number.

In arriving at a figure for computing depreciation, Mr. Hunter estimates the life of a car and its salvage value at the time it is out of service with the company. He figures the life of the Ford cars at two years, although many of them disposed of at the end of two years are giving excellent service to the purchasers. Mr. Hunter believes in letting the other fellow do the overhauling and replacing of parts, that it is cheaper to invest in new machines and avoid the possibility of delays generally accompanying the use of cars over an extended period.

Many times the cash received for the sale of a car greatly exceeds the estimated value. This is a "safety first" principle insofar as the automobile department of the company is concerned. In other words, depreciation is arrived at by deducting the estimated value or salvage from the cost and dividing the result or estimated wearing value by the number of years in service. This same method is used with the trucks, the life of which is estimated at five years. For example: A truck costing $6,000 has a salvage value of $1,000 at the end of five years, leaving a wearing value of $5,000, which, divided by the years of service, gives an annual depreciation of $1,000.

Keep Available Records

Depreciation charges are divided or estimated on a monthly basis, and a monthly statement is made of each car. The form bears the number and make of car, cost to date, estimated salvage, wearing value, depreciation to date, balance, monthly rate of depreciation and expected life from date, a system of value particularly with a corporation operating under the jurisdiction of the Public Service Commission.

Whenever a new car is placed in service, a form or card, 5 x 8 in., is made out giving particulars of the machine, service for which intended, location, operator, where garaged, body, costs, etc., and this card is filed for handy reference. When the car is disposed of, its costs, etc., are tabulated on the back of the card. This is a commendable method for maintaining a record of the car from the time of its purchase to its sale, and the data is useful in more ways than one for comparisons. Insofar as purchase of equipment, supplies, material is concerned there are serially numbered requisitions and forms which follow conventional practice.

How Fleet is Operated

Of the 161 machines in service, 36 are commercial cars and the balance Fords and those mentioned in the code system. Of the 36 trucks, 24 are Whites, twenty-two 2-ton and two 3-ton. There are two 1½-ton Federals, one 1½-ton Mack, three 1500-lb. Reos, one 1000-lb. Vim and five Fords. These are utilized as follows: Three-ton Whites for pulling in cable and setting poles. They are equipped with a winch, derrick and the usual tools and equipment used for this work. Two-ton Whites, Federal and Mack for construction work of the heavy type; Reos, Stewart, Vim and Fords (worm drive) for light construction work. All trucks carry equipment for extricating when mired, as the country roads are very bad from March to May.

The trucks are divided among sixteen stations or areas, these comprising the principal cities, such as Hartford, New Haven, Bridgeport, Waterbury, New London, New Britain, etc. The average radius of operation is 20 miles, with the exception of the one 3-ton and three

2-ton Whites of New Haven. These cover a considerably greater territory. Some idea of the annual mileage may be obtained from the statement that in normal times the construction machines cover 6,000 miles. This year the mileage has been increased about 10 per cent., as much of the material and supplies generally delivered to the supply depots has been hauled by the trucks instead of the common carriers. Shortage of material frequently has compelled the sending of cars from New Haven to Bridgeport, etc., and it is estimated over 2000 miles of wire were handled in this manner.

Advantages of Using Trucks

The advantages of the trucks over horses are legion. They have solved a labor problem in construction work, in that with horses the crews were frequently obliged to spend nights away from home. The lighter machines have replaced from two to three teams.

Cost figures insofar as those dealing with mileage obtained per gallon of fuel and oil would be misleading for application to trucks engaged in other industries, as frequently the engines are run for some time when hauling cable, etc. The company has used cars since 1904, Superintendent Hunter at that time driving the only machine, a converted passenger car. The trouble cars were adopted about 1910, being first used for supervising construction work. The first truck was placed in service in 1911.

Operating Costs

The cost of operating the fleet of Fords in 1917, for fuel, oil, tires, grease, repairs, parts, etc., was .38 cents per mile and the average mileage per car was 25,825 miles. It cost .23 cents per mile to operate the 1½-ton Mack from 1911 to 1915, and that placed in service in May, 1912, and operated to May, 1916, inclusive, cost .09 cents the mile for 34,673 miles. A Federal in operation during practically the same period and covering 18,614 miles, cost .111 cents the mile. Another operating 27,000 miles cost .086 cents the mile.

One 2-ton White in service for 13,679 miles cost .43 cents per mile, while another of similar capacity and driven for 4,341 miles cost .6 cents the mile. A third 2-ton White operated 4,617 miles cost .7 cents the mile, and another driven 4,877 miles cost .56 cents the mile. Records of the company show that two of the 1,500-lb. capacity Stewarts and operated for 16,775 and 14,779 miles cost .6 and .61 cents the mile. As may be noted, there is a difference in the costs of the trucks, and the figures are quoted to show the variations brought about by the conditions previously referred to.

Favors Standardization

Large garages are maintained at New Haven, Bridgeport and Hartford with all complete overhaul work completed at the first-named place. If work other than minor is required at distant points, mechanics are sent. Repairmen are, as a rule, developed, Supervisor Hunter believing this to be the best policy. The station is well equipped with modern machinery, time and labor saving tools and devices, particularly for completing Ford repairs in the minimum of time.

Mr. Hunter believes in the standardization of his fleet and expects that as soon as conditions are normal the company will decide on one make of truck and one make of passenger car. He predicts that concerns utilizing large fleets of trucks will gradually standardize their equipment and says that the practice will best obtain economical and efficient operation.

The Southern New England Telephone Co. is completely motorized, even to the equipment utilized for cleaning out flooded manholes, the mechanical department having reconstructed a Ford chassis for this work. A rotary pump suspended on the frame by two U-shaped brackets or hangers is directly connected to the engine, the pump replacing the transmission. The unit is, of course, towed, it being connected to another Ford by means of a draw bar. Tools, etc., employed in the cleaning work are carried in a large box on the pump chassis.

Taking New York-New Jersey Ferry Census

Because of avoidable delays at the New Jersey and New York ferries, which result in loss of from one to three hours' time to commercial cars, a movement has been started by the Highways Transport Committee of New Jersey to take a census of automobiles over these ferries.

Thomas J. Wasser, Hudson County Engineer and a member of the committee, has drafted a card which operators of trucks and passenger cars will be asked to fill out. The card provides for the tabulation of the time of arrival at ferry, delays, etc., and in addition there will be data gathered by other means.

It is stated that the plan has the approval of the New York port officials and others, and it is believed that the data gathered will also be used to further the proposed New Jersey-New York vehicular tunnel. Those familiar with the situation state that the delays are proving very costly to truck owners and could be largely avoided by placing extra ferryboats in service during the rush hours.

Dates Set for Boston Show

BOSTON, MASS., Dec. 11.—By vote of the directors of the Boston Automobile Dealers' Association at a meeting held today, it was decided to hold the annual Boston Auto Show in Mechanics Building the week of March 15 to 22.

This brings the show two weeks later than usual, this change being made because of the later dates of the New York and Chicago shows and to give manufacturers additional time in which to prepare exhibits.

Chester I. Campbell has been selected to take charge of the Boston show.

Maryland and New Jersey Restore Reciprocity Privileges

Maryland has agreed to restore reciprocity privileges to New Jersey trucks. The authorities of Maryland met Commissioner Dill at Baltimore recently and they held a "get acquainted meeting." The New Jersey official stood pat, to use a poker expression, on his stand that, unless Maryland receded from its position, he would not permit Maryland trucks to operate in New Jersey without a New Jersey license. Dill's determined attitude had its effect. The Maryland officials agreed to restore the reciprocity privileges and the action was officially confirmed by the following letter to Mr. Dill from the deputy attorney-general:

"In compliance with the suggestion made at the conclusion of the conference, I beg to advise that all New Jersey motor vehicles having a rated carrying capacity of not more than 5 tons will be allowed to use the roads of Maryland for a period not to exceed 15 days in any one year. This privilege, of course, is not to extend to companies engaged in transportation of freight or passengers over fixed routes."

In replying, Mr. Dill said that the letter covered the conclusions of the conference, but he desired a clearer interpretation of the "fixed routes" status, maintaining that routes cannot be considered as "fixed" until after they have been continued beyond the reciprocity period. He believes there will be no difficulty in that respect, that the Maryland authorities will interpret it as stated.

The reference to the limitation of trucks to 5-ton carrying capacity relates to a Maryland law that became effective on April 1 of this year, it providing that no registration should be given any truck exceeding the capacity mentioned.

Niehoff Stops Manufacture of Connecticut Replacement Parts

The suit of the Connecticut Telephone & Electric Co., of Meriden, Conn., vs. Paul G. Niehoff & Co., Inc., of Chicago, has been settled out of court. The bill against the Niehoff company charged the infringement of four patents: No. 1,204,104, Nov. 7, 1916; No. 1,217,566, Feb. 27, 1917; No. 1,221,239, Apr. 3, 1917, and No. 1,248,612, Dec. 4, 1917, and charged also unfair competition in the sale of parts simulating the plaintiff's corresponding parts.

The Niehoff Company succeeded in settling this suit before coming to trial, by recognizing the validity of these patents, and by agreeing to discontinue the production and sale of all infringing parts they had been making to fit Connecticut systems, and to substitute for them genuine parts made by the Connecticut Company.

TRUCK EQUIPMENT AND APPLIANCES

Jaxon Resilient Wheel

The Jaxon full floating wheel, just announced by the Jaxon Steel Products Co., of 3066 West Grand Blvd., Detroit, is a new development in resilient wheels, which is constructed along rather original lines. In the Jaxon full floating wheel there are no springs, no working parts and no parts that require renewal during the life of the truck. These wheels are practically the same weight as the ordinary solid wheels now commonly used.

On trucks equipped with full floating wheels the axle is "floated" on a series of rubber cushions, which radiate from the hub, distributing the pressure in all directions—hence the name "full floating." There is no contact between the hub and the tire except through these cushions. The cushions above and at the sides of the hub bear the weight and shocks equally with those underneath.

These rubber cushions respond to shock loads almost instantly, with very little recoil, and will absorb shocks of widely varying intensities. This is due to the ample volume of soft resilient rubber which is exposed to the strains at all times. The opposite sides of these round cushions act as shock absorbers and neutralize practically all recoil.

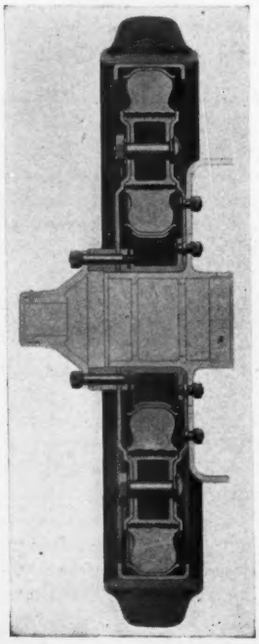
The ability of the full floating wheel to absorb radial, torque and side thrust shocks is obtained by each cushion being supported throughout its entire circumference, so that strains may be uniformly distributed over as much rubber as possible. Inasmuch as there is no motion between any of the surfaces in contact, it is apparent that there can be no abrasion of the rubber cushions, or wear of other parts.

This wheel also absorbs torque shocks by offering resiliency between the axle and tire, allowing a rotary lag momentarily to occur between the center and outside portion of the driving mechanism, relieving the sudden strains upon the driving gears and mechanism upon quick application of the brakes or sudden starting.

Tests have shown that solid rubber tires, mounted on full floating wheels last more than twice as long as when mounted on ordinary rigid wheels. Most of the strains caused by vibrations and slippage against the road are absorbed by the flexible cushions of the full floating wheels, thereby reducing wear on the tires. The majority of vibrations, due to rough or uneven roads, are absorbed by the wheels before being transmitted to the truck, thereby greatly decreasing the wear and tear upon shafts, gears, bearings, universal joints and engine. It has been further shown by tests that Jaxon full floating wheels reduce fuel consumption, depending upon conditions. This is because the tires are kept in constant contact with the road.

The full floating wheel has less tendency to skid, because the flexible cushions allow the skidding strains and deformations to be transmitted more gradually, in the same manner that skidding is decreased by applying the brake gradually. In the full floating wheel there are no parts that can break, wear, rattle or require any more attention than the solid wheel. It can easily be applied to any truck, whether internal gear, worm, or chain drive.

The Jaxon Resilient Wheel
A series of rubber cushions radiate from the hub, distributing the pressure in all directions



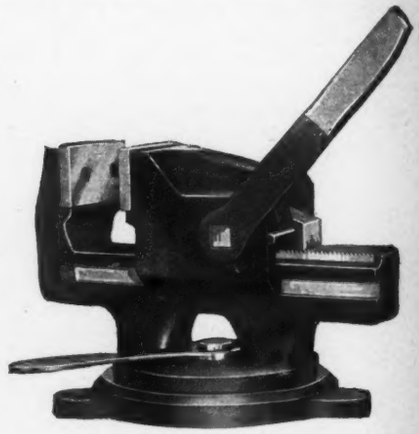
Sectional View of the Jaxon Full-Floating Wheel.

Winan's New Idea Vise

The Barnett Foundry & Machine Co., Irvington, N. J., has just brought out a machinist's bench vise under the name of Winan's New Idea Vise, that embodies many novel features. Reference to the illustration herewith presented will point out its general characteristics. It will be seen that the old fashioned screw and lever has been replaced by a pawl and rack. This is operated by a handle on an eccentric shaft, which will exert a pressure many times that possible with a screw.

The adjustments from 0 to maximum are made instantly with one sliding movement. The pawl eccentric and sliding jaw form a toggle joint (bringing the greatest pressure to bear on the top part of the jaws) causing the work to be clamped tightest at the working part. The moving member of the vise slides away from the operator and there is no handle between operator and vise. The gripping plates are hardened and ground, and the rack and pawl are also hardened steel.

A feature of especial importance is that the whole vise may be removed from its swivel base and taken to surface plate, drill press or milling machine for continuous operations, since the base of the vise is accurately machined to right angles with the jaws.



Winan's New Idea Vise

These vises are made in standard sizes of jaws from 3 in. to 8½ in. and openings of 3½ in. to 12 in.

Buda Model HTU Engine for Trucks and Tractors

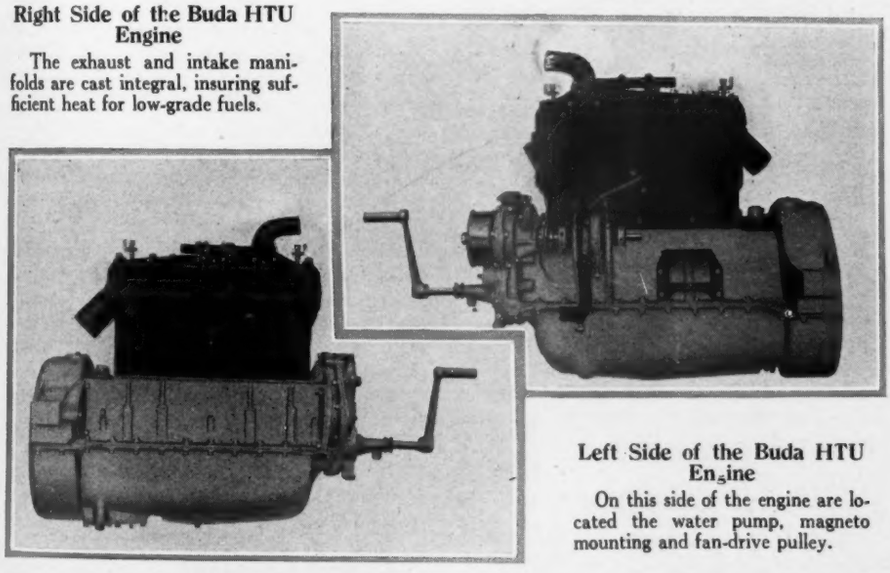
The Buda Co., of Harvey, Ill., has recently announced a new model engine, known as the HTU, designed for truck and tractor service. This new model HTU has 4 cylinders, cast in block, with a bore of 4¾ in. and a 5½-in. stroke. It is designed for 3-point support, the two rear arms being cast integral with the bell housing and the front end of the engine equipped with a trunnion, to attach to the front cross-frame member. The cylinder block has ample water passages. The detachable cylinder head has the spark plugs located in it, the ⅞-in. size being used. The water outlets have removable elbows which can be set at various angles. The crankcase is composed of gray iron castings, the upper half supporting the bearings, and the lower half acting as an oil tank; these two forming a housing over the flywheel which will take the standard transmission, suitable for the No. 3 S. A. E. bell housing.

The valves are operated from a single camshaft and all are located on one side, the cylinders being L-head. The valves provide a passage 1⅞ in., clear and the ends of the stems are hardened. Pistons are cast iron and ground to size. The connecting rods are the usual drop forging, I-beam section, of open hearth steel. The upper end is bushed with phosphor bronze and the lower of bronze with babbitt lining. The rod ends are held in place with 4 bolts. The camshaft and cams are forged in one piece of open hearth steel, case hardened and ground. The timing gear bolts to one end of this shaft. The crankshaft as well is of open hearth steel, heat treated, machined and carefully balanced. It is drilled for force feed oiling. All gears are cut helical and have a wide face.

The main bearings are bronze with babbitt lining and the camshaft has die cast babbitt bearings. Water is circulated by centrifugal type of water pump. The fan bracket is cast integral with the cover to the gear case.

A single piece oil pan is employed for this engine when it is designed for truck service. When designed for tractor service the oil pan is made in two parts to provide unusually easy access to the bearings for adjustment. The lower half of the oil pan is easily removed. Six steel bolts passing through a flange integral with the crankshaft securely anchor the flywheel.

Lubrication is by force feed to all bearings. This system is provided with a pressure regulating valve. The oil is first pumped from the reservoir, located beneath the crankcase by gear pump. The oil is forced through pipes to the main bearings and then through passages in the crankshaft to connecting rod bearings. Camshaft bearings and piston pins also are lubricated by this force feed system, and the cylinder walls are cared for by the splash. The timing gears, as well, are lubricated from the pump. The mountings for starting, lighting and ignition apparatus provide for the convenient mounting of almost any make. The flywheel is 17 in., and has a rim 3½ in. wide. The engine for truck work has a 76-lb. flywheel, and for tractor a 118-lb. flywheel. The weight complete, with regular equipment, is 800 lb.



Right Side of the Buda HTU Engine

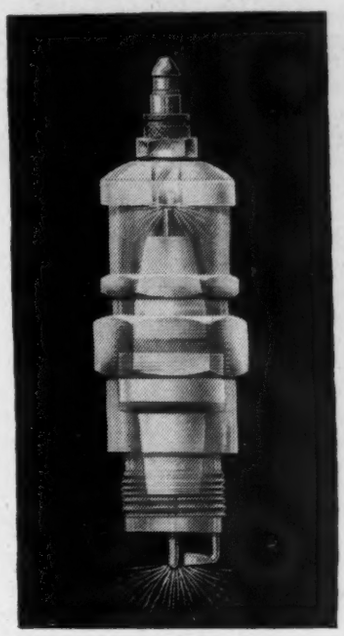
The exhaust and intake manifolds are cast integral, insuring sufficient heat for low-grade fuels.

Left Side of the Buda HTU Engine

On this side of the engine are located the water pump, magneto mounting and fan-drive pulley.

The Kant-Break Spark Plug Built to Withstand Hard Service

The Kant-Break Spark Plug, manufactured by the Mazda Electric Mfg. Co., 203 N. 10th St., St. Louis, Mo., is constructed to withstand the unusual wear and tear of extremely hard service. It contains several features which are interesting, the principal ones being the spark gap or intensifier, the shell cut from cold rolled hexagon steel, the gasket system and the ventilator at the porcelain shoulder. This plug, it is stated, can be packed with grease or oil and the intensified flame will burn the points clear. It is stated these plugs increase the mileage and save gasoline and prevent missing of the engine, due to dirty or fouled plugs, etc. It also assists starting, since the spark flame is intensified.



Phantom View of Kant-Break Spark Plug

This spark plug, due to its unusually strong construction and long life, is claimed to be indestructible.

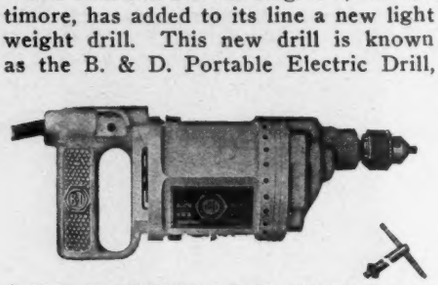
The electrodes and firing points of this spark plug are of nichrome, a special alloy made to withstand unusual heat without disintegrating, and are knife-blade shaped to spread the sparks fan-like. The plug is machined from a solid bar of 1⅛-in. cold rolled hexagon steel. It is full nickel plated and polished, which makes it unusually attractive. It has gaskets above and below the shoulder of the insulator. This porcelain insulator is vitrified silica and lava and known as vitra-sila. The maker states that this insulator will withstand unusual temperature changes.

An unusual feature of this plug is the spark gap intensifier between the base of the terminal spindle and the center electrode which extends above the porcelain insulator into the cavity in the spindle. This spark gap is enclosed in an air tight chamber, which makes it safe against exterior explosions caused by gasoline leaks. Another feature of this plug is the ventilating chamber surrounding the shoulder and upper part of the insulator, which permits the circulation of cool air and maintains the temperature more evenly. Other features are the steel sleeve protector, the universal terminal, the lock nut, the insulator top, extending within the steel sleeve protector and the anti-fouling chamber.

Puritan Machine Works, Detroit, Mich., has established a branch at 245 W. 55th St., New York City. B. F. Taylor will be in charge.

Black & Decker Light-Weight Drill

The Black & Decker Mfg. Co., of Baltimore, has added to its line a new light weight drill. This new drill is known as the B. & D. Portable Electric Drill,

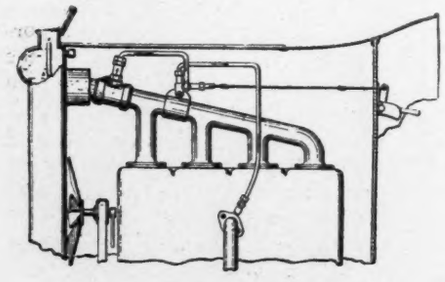


A New Light-Weight Drill, Which Can be Used With Either Alternating or Direct Current

and is extremely light, weighing only 6⅜ lb. This machine will accommodate drills of 3-16-in. diam. It is 4 in. diam. and 12 in. overall and is equipped with a series compensated motor and can be used with any electric light switch on either alternating or direct current. It has a no-load speed of 2600 r.p.m. and a full load energy consumption of 175 watts at which the speed is 1000 r.p.m. It can be used most advantageously for drilling small holes in steel, iron or wood.

Puritan Oxgin-iza

It is an undisputed fact that a motor car runs better under moist atmospheric conditions. The Puritan Oxgin-iza supplies this condition at all times by taking the steam out of the radiator cap. Rusty water, anti-freeze mixtures, anti-leak compounds or anything that might be put in the cooling system will not interfere with the device. It draws the steam from the internal space of the radiator through the radiator hose to the control valve, from there to the Puritan inlet gasket, which fits between the carburetor and manifold, thereby eliminating all drilling and tapping. The control valve is operated by the driver from the seat. The reason for the existence of this control is in order to close the valve when starting an especially cold



Puritan Oxgin-iza
A device to supply the mixture in the manifold with moist air

engine, and to close before stopping the engine, for then all moisture will dry out and eliminate all danger of rust. It is easy to install and will fit any truck. The Puritan Machine Works, Stoneham, Mass., is the manufacturer.

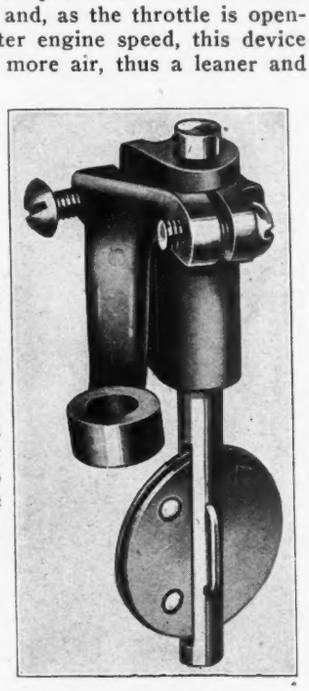
Apex Carburetor Throttle Replaces Standard Equipment

The Apex Electric Mfg. Co., of 1410 W. 59th St., Chicago, Ill., has brought out the Apex carburetor throttle which retails at $3.50.

This is a device which replaces the throttle in the Holley or Kingston carburetor which is regular equipment on Ford cars, and is designed to supply auxiliary air at this point.

The accompanying illustration shows the device itself and shows the split butterfly valve through which air passes into the mixture. Air is admitted through the top of this device.

This device provides a rich mixture for starting and, as the throttle is opened for greater engine speed, this device will deliver more air, thus a leaner and



The Apex Carburetor Throttle Showing the Split Butterfly Valve, Through Which Air Passes Into the Mixture

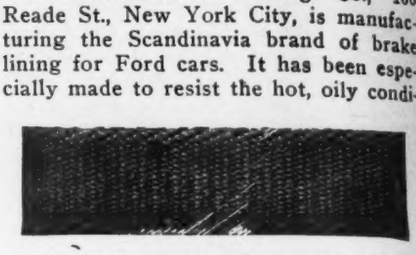
snappier mixture is provided, which prevents the engine from loading. It is stated to reduce the deposits of carbon as well as increase the mileage per gallon of fuel.

Vul-Cot Fibre

This product is made of vulcanized cotton fibre, by the American Vulcanized Fibre Co. It is hard and tough and insoluble in ordinary solvents. It will not corrode nor deteriorate and oil and greases do not adversely affect it. It can be machined in any way desired, gives better results than wood and can be embossed, bent and polished, but it cannot be molded. It is a good insulator and can be used to make fibre gears, rollers, washers, disks, etc. For facing of friction clutches and brake bands it also meets conditions and will not burn out or wear out quickly. The ease with which this material may be turned and threaded makes it adaptable in many trades, and in many places on the automobile. It is made by the American Vulcanized Fibre Co., Equitable Bldg., Wilmington, Delaware.

Scandinavia Brake Lining

The Scandinavia Belting Co., 106 Reade St., New York City, is manufacturing the Scandinavia brand of brake lining for Ford cars. It has been especially made to resist the hot, oily condi-



Scandinavia Brake Lining, Designed to Resist the Hot, Oily Condition of the Ford Planetary Transmission

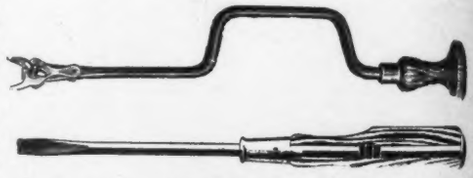
tion found in the Ford planetary transmission and it will be found proof against oil and heat, and is guaranteed not to chatter or glaze. This lining is made of a good grade of strong, staple cotton, interwoven into a close compact mass, and impregnated with a special compound. It is then passed through a hardening and frictioning process. This lining is sold in sets, already boxed, containing 3 bands, 23 in. long, 1⅛ in. wide, and 5-32 in. thick, with sufficient rivets to attach the band.

M-B Insulectric Screw-Driver and Adjustable Valve Grinder

Two new tools of interest to the trade have been introduced by the M-B Tool Co., of Danielson, Conn., these being the Insulectric Screw Driver and the Adjustable Valve Grinder.

The M-B Adjustable Valve Grinders are manufactured in two types, the brace type and the straight or screw driver type, the former known as No. 60 and the latter as No. 61. The former is made in the form of a bit brace. It is instantly adjustable to valve tops whether slotted or drilled. The overall length of this tool is 16 in. They are sold packed 6 in a box. The No. 61, straight type, has an adjustable end similar to the No. 60, but the shank is straight. The length overall of this model is 17 in.

The Insulectric Screw Driver has a blade of special tempered 5-16-in. tool steel, hammer forged with tapering tip secured through ferrule by a steel rivet. This driver has a heavy rivet head sep-



Upper: Adjustable Valve Grinder; Lower: Insulectric Screw Driver

arated from the blade by hard fibre insulation. It is made with blades from 2 in. to 12 in. These are packed 6 in a box. This model is the No. 52 and in addition to this a No. 53 is made with a blade of ⅜-in. tool steel, hammer forged as in the former case. It resembles the No. 52 in general construction.

Tags and Records for Dealers, Repair Shops and Garages

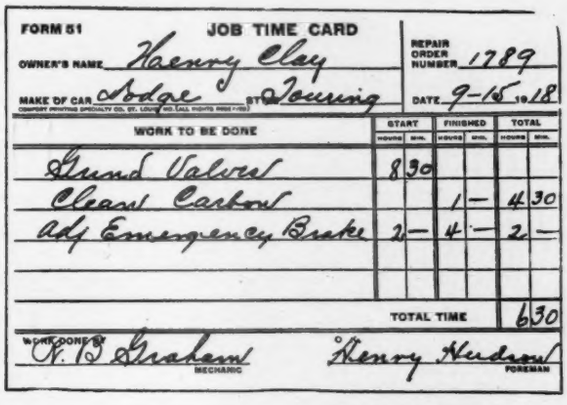
The Comfort Printing Specialty Co., of St. Louis, manufactures a complete set of tags and record forms for automobile dealers, garages and repair men. These tags and forms are made to cover every transaction and to give a full record of material and time put in on each job. In all there are over twenty-five forms, giving every shop ample opportunity to select forms that fit in with its regular routine.

These tags and forms are manufactured and printed in lots of several hundred thousands, cutting cost of production to the minimum. They are sold to the automobile men in quantities to suit their needs. A dealer may find that a dozen of these forms will give him the necessary records for his shop. These forms can be purchased from the Comfort people at less than it would cost the ordinary printer to set them up.

The repair tag provides space for all shop records on a repair job. On the back space is provided for a record of parts used and time put in. It has a space for the owner's signature, both when car is left and when delivered. There is a perforated claim check attached.

The Battery Tag is divided into three parts by perforations. The first part is attached to the battery and gives a record of repairs to be made, how long charging takes, when received, when promised, etc. The second part, when torn off, becomes a regular size (3 x 5) file card and gives the office a full record of the work done and the proper charge to be made. The third part is a claim check given the owner.

The Job Time Card is a form printed on substantial cardboard and covers the work of each man on each job. It gives an accurate record for every job and fits in with any record that may be in use.



FORM 51 JOB TIME CARD

OWNER'S NAME Henry Clay — REPAIR ORDER NUMBER 1789

MAKE OF CAR Dodge — STYLE Touring — DATE 9-15 1918

WORK TO BE DONE	START HOURS	START MIN.	FINISHED HOURS	FINISHED MIN.	TOTAL HOURS	TOTAL MIN.
Grind Valves	8	30				
Clean Carbon			1	—	4	30
Adj Emergency Brake	2	—	4	—	2	—
				TOTAL TIME		630

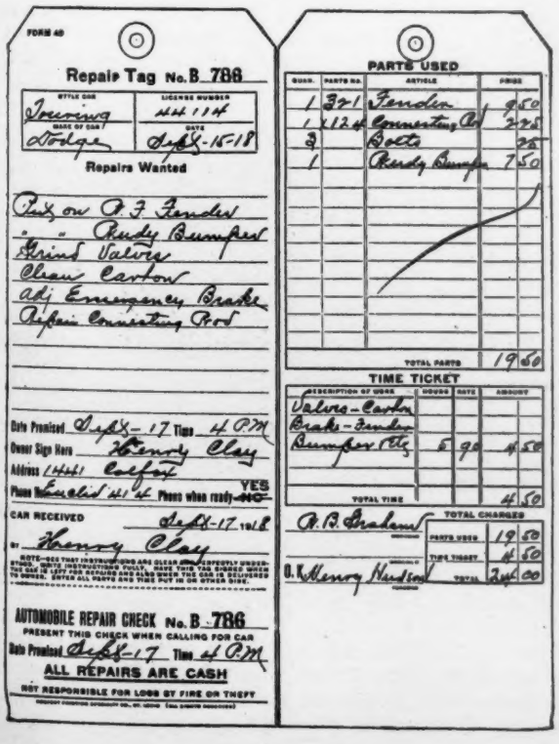
WORK DONE BY A. B. Graham MECHANIC — Henry Hudson FOREMAN

The Repair Tag

For shop records on repair jobs. Space is provided on the back for a record of parts used and time put in. It has a space for the owner's signature, both when car is left, and when delivered. There is a perforated claim check attached.

The Job Time Card

This is a form printed on substantial cardboard and covers the work of each man on each job. It gives an accurate record for every job and fits in with any record that may be in use.



FORM 40

Repair Tag No. B 786

STYLE CAR Touring — LICENSE NUMBER 444 114

MAKE OF CAR Dodge — DATE Sept 15-18

Repairs Wanted

Fix on R F Fender
" " Rudy Bumper
Grind Valves
Clean Carbon
Adj Emergency Brake
Repair Connecting Rod

Date Promised Sept 17 Time 4 P.M.
Owner Sign Here Henry Clay
Address 1441 Cook
Phone Euclid 41 4 Phone when ready YES NO
CAR RECEIVED Sept 17 1918
BY Henry Clay

NOTE—SEE THAT INSTRUCTIONS YOU ARE CLEAR AND RESPECTFULLY UNDERSTAND. WRITE INSTRUCTIONS YOUR SELF. GIVE THIS TAG SIGNED WHEN THE CAR IS LEFT FOR REPAIRS AND CLAIM CHECK THE CAR IS DELIVERED TO OWNER. ENTER ALL PARTS AND TIME BOTH IN OR OTHER SIDE.

AUTOMOBILE REPAIR CHECK No. B 786
PRESENT THIS CHECK WHEN CALLING FOR CAR
Date Promised Sept 17 Time 4 P.M.
ALL REPAIRS ARE CASH
NOT RESPONSIBLE FOR LOSS BY FIRE OR THEFT

PARTS USED

QUAN.	PARTS NO.	ARTICLE	PRICE
1	321	Fender	9 50
1	1244	Connecting Rod	3 25
3		Bolts	75
1		Rudy Bumper	7 50
		TOTAL PARTS	19 50

TIME TICKET

DESCRIPTION OF WORK	HOURS	RATE	AMOUNT
Valves-Carbon			
Brake-Fender			
Bumper Adj	5	90	4 50
TOTAL TIME			4 50

TOTAL CHARGES

PARTS USED	19 50
TIME TICKET	4 50
TOTAL	24 00

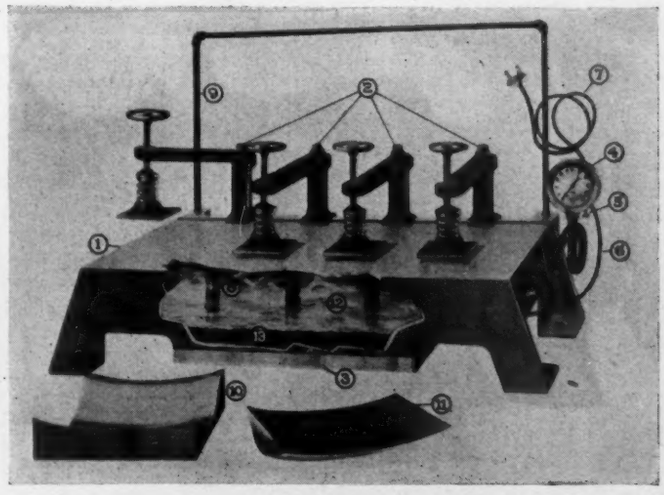
A. B. Graham MECHANIC — O. K. Henry Hudson FOREMAN

The Clark Steam Vulcanizer

The Consolidated Products Co., 1838 Central Ave., Cleveland, Ohio, is marketing the Clark Automatic Electric Steam Vulcanizer in which the steam for vulcanizing is made by electric current and the electric current in turn is controlled by the steam pressure. The accompanying illustration shows a cutaway view of the vulcanizer. In place of the clamps shown, weights can be had if desired. The 4-bar tube plate and tread repair mold is shown herewith, although it is made in the 6-bar size also.

Referring to the illustration, 1 is the heavy semi-steel steam vulcanizing chamber, which is 20 x 8 in.; 2 is the specially designed tube bars, which furnish pressure in a practical manner. These swing out of the way and can also be moved lengthwise on the plate as desired. The regulation tube arms with weights can be supplied if wanted; fig. 3 represents the heating unit which is 12 x 6 in.; 4 is the steam gauge with automatic pressure control installed. This insures a visible and automatic temperature regulation. Fig. 5 is the adjusting screw, this allowing the operator to set it at any desired pressure; 6 is the asbestos cable connecting the gauge with the heating coil; 7 is the heavy asbestos flexible cable cord with a socket to attach to the lighting fixture. In the cut-away portion fig. 8 represents the reinforcement lugs which are spaced about 4 in. apart and insure strength to the steam chamber, and 9 is the tube rack. But 1 qt. of water is used in this vulcanizer shown at 12. It will last several years without renewing, since there are no pipes or vents and the water simply condenses and never escapes.

This concern is manufacturing tread molds, shown in the illustration, and also special size wall and bead mold vulcanizer plant which in conjunction with this outfit described will give quite a complete outfit.



The Clark Vulcanizer

This vulcanizer is operated by electricity, it being used to make the steam, and the electricity in turn is controlled by the steam. It can be had with weights instead of the clamps if desired.

The Waltham Clock for Commercial Cars

A clock designed especially for use on commercial cars and built for hard service is being manufactured by the Waltham Watch Co., of Waltham, Mass.

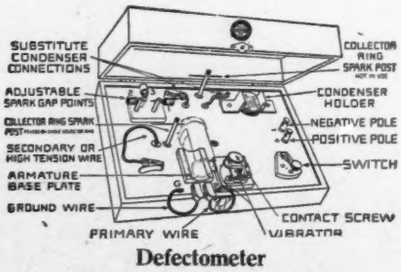
Radium Hands and Dial Show the Time in Darkness

This clock is known as model O, and it will run with the accuracy of a fine watch, in spite of rough roads and climatic changes.

This new clock for trucks has two main springs and a jewel movement, and requires winding but once in eight days, the red signal light being flashed when winding is necessary. Radium hands and dial show the time in darkness, eliminating the necessity for dash light for this purpose.

Defectometer

The Defectometer is a new and useful device for those engaged in magneto repair work. It enables the repair man to quickly locate shorts in the various



Defectometer

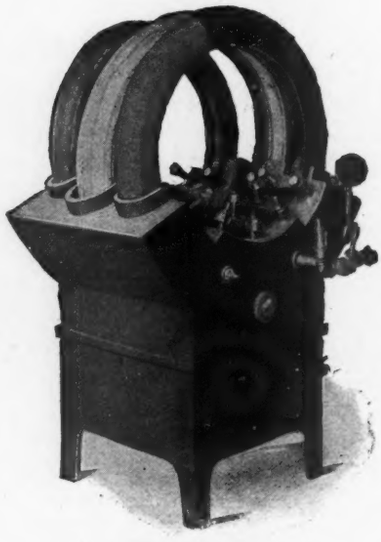
Showing case and its contents

parts of the magneto. It is designed and manufactured by Paul G. Niehoff & Co., Inc., Chicago, Ill., who are authorities on magnetos. It is said to be the first instrument of its kind ever put on the market and should prove to be a valuable assistant to the electrical repair man, as its possibilities are very extensive for test work. This device will instantly determine whether the condenser is out of condition, whether the collector is defective, the armature dead, etc. The price is $25.

Zwebell Ribbed Retreader and Tire-Building Machine

A new machine for retreading ribbed tires and tire rebuilding is being manufactured by Zwebell Bros. Co., of 482 Milwaukee St., Milwaukee, Wis. This machine is adapted for sectional work, retreading, putting on tread bands, half soling, double treading, etc. It is designed to meet the demand for moderate priced equipment, and has been designed by a man experienced in tire repairing and rebuilding.

The machine has three 1-3 circle cavities with a cross section of 3½, 4¼, and 5¼ in. respectively, which will handle any size tire from 28 x 3 to 38 x 5½ in. These cavities are deep enough to cure the tires over the beads when desired. The boiler is contained within and gas or kerosene is used as a fuel to generate steam. Each end of each cavity is provided with semi-curing flanges to guard against breaks in the cure.



The Zwebell Tire Machine

This is a ribbed retreader and tire-building machine, it being shown in the illustration complete and in actual operation. Notice the absence of steam pipes and unnecessary parts.

The raised centers of the sides of the cavities are so constructed, that with the use of air bags and standard bead molds, a section can be cured in the same manner as in regular sectional molds in rib, or with the pad in either plain or non-skid design. For retreading the pressure on the tread is secured by pressing against the sand bag placed in the tire. This concern states the advantage of using the sand bag is that it distributes the pressure uniformly and greater pressure can be secured. Either ribbed tires, non-skid or plain tires can be accommodated.

The retreading band can be cured on in the same manner as treads built of raw gum. In half soling, to make it secure enough to hold under hot weather conditions, it seems best that the half sole should be vulcanized on. This machine is well adapted to this class of work and the cavity is deep enough to cover the bead. This concern recommends the use of its special, Quick-cure Cement on the carcass and tread, and the cure is effected in the same manner as on the tread hand work, the only difference being in the time of the cure.

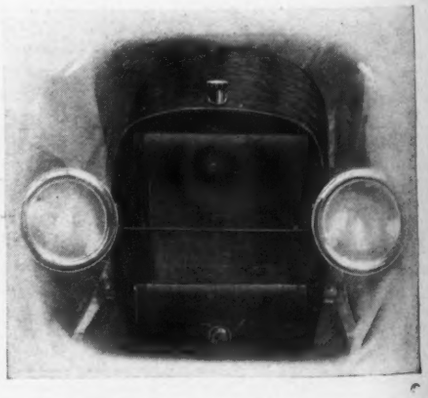
Double-tread work can be accomplished in the same way as half-sole work, using this concern's special cement. It is advisable to sew one seam around the edge to prevent possible separation.

The price of the Zwebell retreading and tire building machine complete, with 6 sand bags, 3 pressure bars, 15 steel clamps, 2 gas burners, valves and mixers, drop forged wrench, quick acting socket wrench, steam gage, safety valve, filling funnel, air cocks, water gage glass and safety drain plug is $550 f.o.b. Milwaukee. Kerosene or gasoline burners cost extra. This concern recommends the use of its tire repair materials in connection with this machine.

The Champion Hood and Radiator Covers

The Champion line of hood and radiator covers is being manufactured in many sizes to accommodate the various makes of passenger cars and trucks. These covers are tailored to fit neatly and afford protection against radiator freezing in cold weather when the car is left standing for any length of time. The degree of opening provided by these covers can be regulated, in other words, the bottom curtain can be raised to cover a portion of the radiator which is very desirable in extremely cold weather. This feature protects the base of the radiator. With the curtains fully open, sufficient air is provided to allow for the proper cooling of the engine, on warm days, or when the engine is running.

These covers are made in two parts. The hood of the engine can be raised without removing the cover or interfering with it in any way. The cover is



Champion Hood and Radiator Cover

This illustration shows the curtain in the radiator entirely open. It can be partly closed, or entirely closed, when the car is standing.

stitched diagonally in quilt-fashion which adds greatly to the appearance.

A special model of hood cover is made for the Ford car which has a one-piece

curtain. It is made with an extra extension below the crankshaft to thoroughly protect the bottom of the radiator and prevent freezing. It is made for all years and models of Ford cars and is of good material.

Radiator covers vary in price from $2 to $8.50 for the largest trucks. The hood and radiator covers vary in price from $4 to $18. The radiator covers, and hood and radiator covers come in a good grade of imitation leather, double felt lined, or of leatherette and lined with thick felt and are priced accordingly. They are manufactured by the Champion Chemical Co., of Springfield, Ohio.

The Ewald Tire Retreader Outfit

A new outfit to combine two worn tires into one to secure additional mileage from the same, has been introduced by the Romort Mfg. Co., Oakfield, Wis. The outfit is known as the Ewald Tire Retreader Outfit and consists of a retreading machine, two boxes of staples, reliner cement and two rolls of reliner, with which the staples are covered after being inserted. The retail price of this outfit complete, packed in a box, is $15.

The maker states that two castings properly stapled together with this retreader will give from 1000 to 3000 miles service, and that a satisfactory job can be done if the staples are properly applied.

The fabric rubber is prepared ready to cement in place. After the staples have been inserted, this liner is used to cover them so that the inner tube will not become chafed.

The retreader presses the two tires tight together and then forces the staple through until it touches the upper die of the retreader. This upper die curves the points of each staple and forces them back into the casing again, making a good clinch. It will readily be seen that this machine can be used otherwise than by simply combining old casings.

The Ewald Tire Retreader Outfit
This illustration is of the entire outfit, it including the retreader, staples, cement, etc.

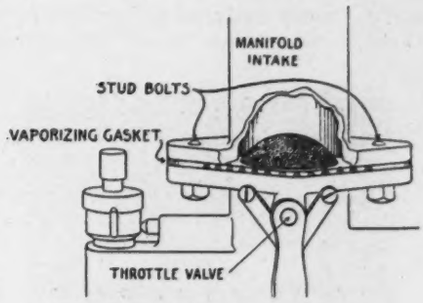
The Western Electric Direct-Connected Power and Light Set

The Western Electric Co., 195 Broadway, New York City, is manufacturing a direct connected power and light set. It is a 32-volt outfit for use where buildings are not too widely scattered. The 3¼-hp. engine operates on kerosene and the outfit is self starting. It has vacuum fuel feed and a throttle governor. Splash lubrication is used in the engine, which is air cooled. An automatic stop prevents overcharging and the generator permits of a tapering charge to the battery. A feature of this outfit is the dual control of the process of charging. The regular tapering charge can be given the battery or an occasional soaking charge. The generator is mounted upon a shaft with two bearings. At one end of the shaft is the drive pulley for operating machinery or shafting.

The Western Electric 32-Volt Power and Light Outfit

The Warren Vaporizer

The Warren vaporizer, a device, gasket shaped, to be inserted between the intake manifold and carburetor flanges, and designed to break up the gases passing to the engine, has been patented and is being manufactured by John W. Warren, of San Antonio, Tex. It sells for $2.



The Warren Vaporizer in Position
This illustration shows the Warren vaporizer, installed between the flanges of the intake manifold and the carburetor.

The device replaces the gasket between the carburetor and the manifold, and consists of this gasket-shaped device with two sheets of fine mesh gauze wire in the center opening of it, so arranged that each mesh of one sheet offsets, or cross-cuts that of the other. As the mixture of gas and air leaves the carburetor it rushes through the screens and is more thoroughly broken up, making the mixture more perfect and combustible, and giving a quicker and more powerful explosive. It is guaranteed to increase the mileage from 10 to 25 per cent. and improve the running of the engine in general.

Import Licenses Valid Indefinitely

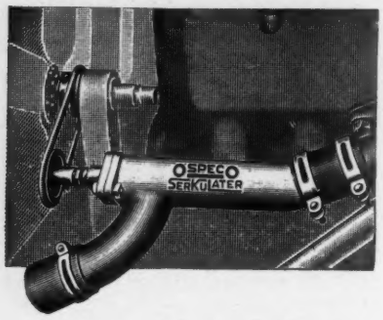
WASHINGTON, Dec. 26.—Import licenses issued or renewed since August 25 will be valid indefinitely unless revoked, provided it is not otherwise expressly stated in the license. Provisions printed on the licenses to the contrary will be disregarded.

Buda Markets Valve Remover

The Buda Company, of Harvey, Illinois, well-known manufacturer of engines, has placed on the market a valve remover to simplify this operation. The accompanying illustration shows the valve remover in position on a Buda engine. With this tool the valve can readily be removed for inspection or grinding. It can be used on all Buda engines except the model RU. By substituting a smaller block to fit the port hole openings, the tool can be used on this model also.

Ospeco Water Pump for Ford Cooling System

The Michigan Auto Products Co., of Detroit, Mich., has recently introduced the Ospeco Centrifugal Pump for Fords, a water pump designed to be interposed between the lower water connection



The Ospeco Centrifugal Pump

It is readily attached to the Ford water circulating system and is driven from the fan shaft by belt.

from the radiator and the engine, and designed to propel the water of the cooling system.

This device is simple in construction and very easily installed. A small belt pulley is clamped on the fan shaft and the water pump is clamped to the hose. A coiled spring belt is passed around the pulley on the fan shaft and the adjustable pulley on the end of the propeller shaft. This product is sold at $5.

A Visible Measure Gasoline Dispenser

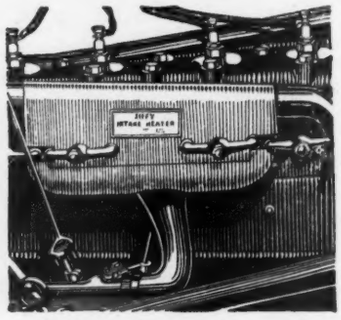
The accompaning illustration shows the general appearance of the Brady Dispenser, opened to show mechanism. The pump is driven by a Westinghouse ¼-hp. motor, entirely inclosed in the base, according to the rules of the National Board of Underwriters. The dispenser visibly delivers a full gallon for every gallon ordered. When gasoline is delivered to the garage, the tank gage shows accurately the full quantity obtained. Every gallon drawn from the tank into the dispenser is shown on the tank register, which can be checked with the tank gage. Thus, both public and dealers are protected from loss. It also saves time over the old way of filling tanks with measuring cans. The incidental losses in the vending of gasoline are claimed to be eliminated by the use of this ingenious apparatus, which is manufactured by The Visible Measure Gasoline Dispenser Company, Louisville, Kentucky.

Ford-Clark Valves and Bolts

The Ford-Clark Company, of Cleveland, Ohio, maker of motor car parts, has among its specialties inlet and exhaust valves for internal combustion engines, used in motor cars, motor trucks, tractors, motorcycles, marine and stationary engines, also valves of similar design for air compressors, and other equipment where a poppet type valve is required. It also manufactures hardened and ground spring shackle bolts for use in motor cars, trucks, trailers and tractors. The equipment of this concern is very complete and they specialize solely along these lines.

The Jiffy Intake Heater for Ford Cars

A new equipment for producing better vaporization of the mixture on Ford cars has been produced by the Twin Fire



The Jiffy Intake Heater Attached

Spark Plug Co., of 720 Grand River Ave., Detroit, Mich. It is known as the Jiffy intake heater.

The device consists of a compartment or enclosure to fit over portions of the exhaust and include practically all of the intake manifolds, thus permitting the wasted heat from the exhaust to be utilized in assisting vaporization of the incoming mixture. This is exceptionally advantageous with the use of the present day fuel.

The device is made of heavy gage steel and is held in place by the two center manifold clamps. It can be removed for the summer months, if desired. The price complete is $1.

Pechstein Tire-Building Stand

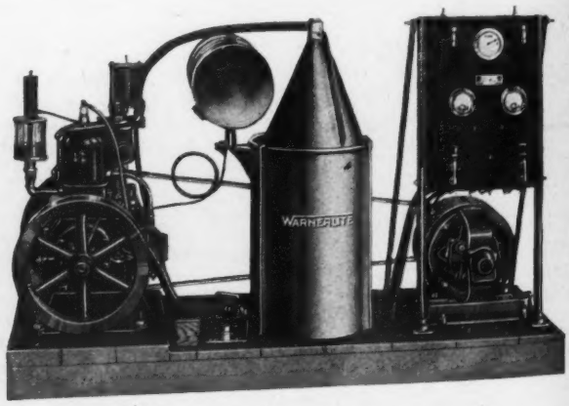
The Pechstein Iron Works, of Keokuk, Iowa, is manufacturing tire-building stands in two types, one controlled by a latch and ratchet, illustrated herewith, and the other controlled by a foot lever and series of rods to the ratchet which is returned to place by a weight when the foot pressure is released. These tire-building stands are manufactured with plain bearings and resemble those of similar types now on the market. The manufacturer claims the workmanship to be first class, and the device good appearing.

Uni-V-Sal Valve-Grinding Tool

The feature of this tool is that it is small and compact and has an adjustable spanner and a screw-driver blade. The opposite end will fit a bit-brace, a tap wrench or hand wrench.

Manganese Ore Located in Oregon.—The United States Geological Survey, Department of the Interior, has located more than 250,000 tons of manganese ore in Jackson County, Oregon. Experts connected with the department have been examining deposits.

The Warnerlite Model Farm-Lighting Plant



The Warnerlite Company, of Davenport, Iowa, has brought out the farm lighting and power plant, shown herewith. The engine is a 4-hp. vertical type, single cylinder, and is water cooled. It is belted to a multipolar generator of 1000 watt capacity, normal. It operates at 30-45 volts and is automatically controlled when running, by the electric governor. The instrument, wiring and automatic appliances are enclosed in a strong steel box. The plant is started by simply pressing the starting switch. The electric governor is used to control the speed of the engine, according to the load, thus giving the batteries a taper charge. The automatic cutout will stop the plant when the batteries are charged. In case the engine stops, the generator will be cut out, leaving the batteries connected for light. The engine is of the Binder type and usable for operating farm binder.

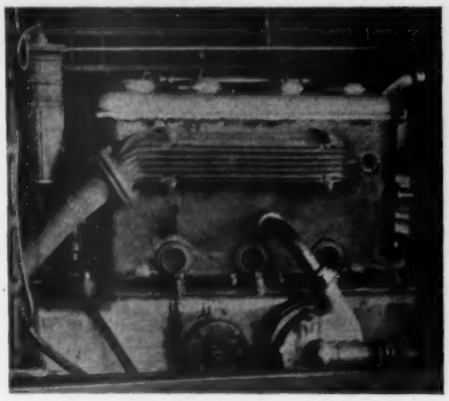
A Technical Description of the American Sleeve-Valve Engine

By C. P. SHATTUCK

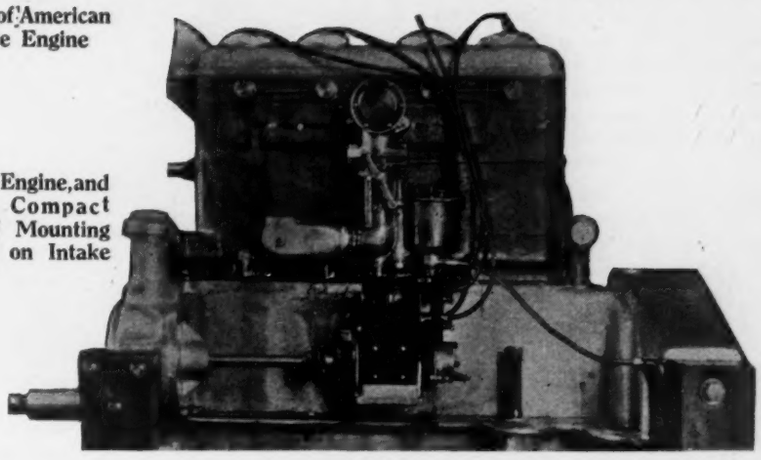
THE American Sleeve Valve Motor Co., 1926 Broadway, New York City, has completed development work on the American sleeve valve engine and is to manufacture it for commercial cars in three different sizes, the models differing only in bore and stroke and horsepower production, and mounting. The engine, which, it will be remembered, was exhibited at the New York show last winter as a passenger car unit, and which has been changed in detail, has a single rotating sleeve in each cylinder between the cylinder wall and the piston, and this sleeve rotates at uniform speed, making one complete revolution to four of the crankshaft. Two equal sized ports, one directly opposite the other, are cut into the sleeve, and these openings register with ports in the cylinder wall and those in the extension of the cylinder head in the cylinder when the sleeve has revolved a certain number of degrees as when performing the inlet and exhaust functions.

All Four-Cylinder Engines

All engines to be produced are to be four-cylinder units. The model described herewith has a bore of 4 in. and a stroke of 5, giving a piston displacement of 251.2 cu. in., and the cylinders are cast in block with no water space between each pair of outer cylinders. Rotation of the revolving sleeves is by means of helical gears at their lower ends and helical pinions on a longitudinal shaft, the last-named being driven from the crankshaft through a train of helical spur gears. There are two helical pinions on the longitudinal shaft, one for each pair of revolving sleeves. These pinions are in mesh with the helical gears of the two middle sleeves, and the other two sleeves are driven by the helical gears formed integral with them, meshing with them. The gears are bronze and cast iron, the latter being cut in with teeth of the opposite hand from those of the bronze members so as to obtain proper mesh. The reduction of 4:1 between the crankshaft and driving shaft actuating revolving sleeves is obtained by a train of gears at the front of the engine.



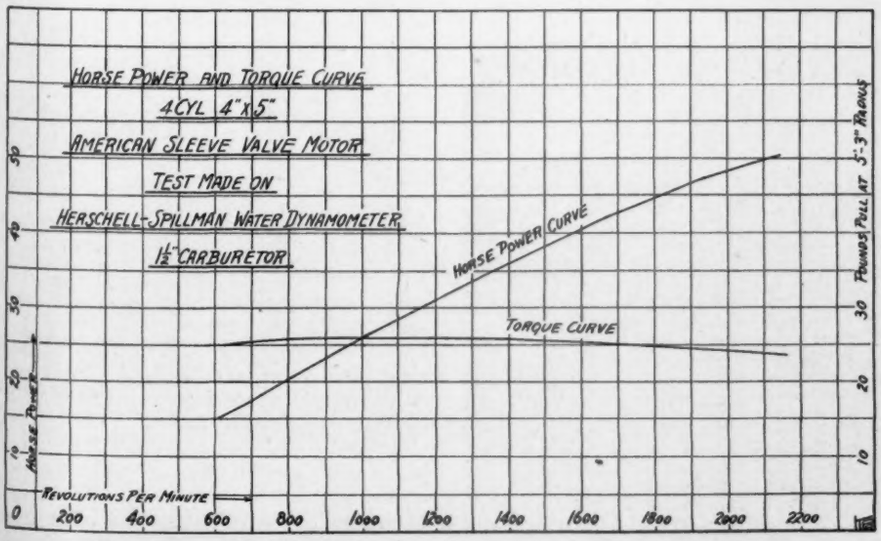
Exhaust Side of American Sleeve-Valve Engine



Inlet Side of Engine, and Illustrating Compact Method of Mounting Diaphragm on Intake Flange.

Removable Cylinder Heads

The cylinder heads, of which there are four, are interesting in their construction. Each head comprises an aluminum casting over which is screwed a steel sleeve or expanding shell as it is termed. The shell has two longitudinal slots cut in it quite close to one another, and these extend practically the entire length of the shell, but one from one end and one from the other. The construction functions somewhat similar to a piston ring, allowing for a certain amount of flexibility. The threaded section of the casting does not extend to the extreme upper end, which is provided with a pair of expansion rings carried in a single groove. The sleeve slips over these rings, which exert a uniform pressure against the steel sleeve, so expanding the last named as to seal the opening between it and the revolving sleeve.



Horse Power and Torque Curves of the American Sleeve-Valve Engine

Ports Vary in Size

The ports cut in the steel sleeve are rectangular and somewhat smaller than those cast in the cylinder head. The ports in the revolving sleeve are wider or larger than the cylinder wall and cylinder head ports, thus assuring that they are completely uncovered for a predetermined time. The sleeve, of course, revolves in one direction only and its ports register alternately with the intake and exhaust openings of the cylinder. Inasmuch as the valve sleeve rotates at a uniform speed, there is a

uniform and rapid increase in the valve opening from zero to the maximum when it remains for a brief interval, then decreases from maximum to nothing in the same manner. The designer lays great emphasis on this timing, claiming that the valve action is perfect at all speeds, and that the ports can be made any capacity essential to insure maximum efficiency and that construction is largely responsible for the horsepower and torque curves shown in an accompanying chart.

No less interesting is the use of a conical combustion chamber in the cylinder head, and the spark plug is located directly in the center of the head, being submerged below the top of the head. Although the plugs are not readily accessible by means other than a socket type of wrench, it is stated that plug trouble is rare as they are very effectively water-cooled.

Cylinder Block With Heads, Showing One Partially Raised

Novel Oiling System

One of the problems confronting designers of sleeve valve types of engines has been proper lubrication without excessive smoking and the prevention of leakage of the gas from the ports around the valves. These problems are somewhat interconnected, for it is held that with efficient lubrication of the parts mentioned, there will be little if any possibility of leakage.

In the American sleeve valve engine the revolving sleeve has about 50 helical cut oil grooves over its entire length below the ports, and these grooves distribute the lubricant. Inasmuch as the oil would have to travel some distance from the bottom of the sleeve to its top, means are provided for lubricating the upper end by the arrangement shown in an accompanying sketch.

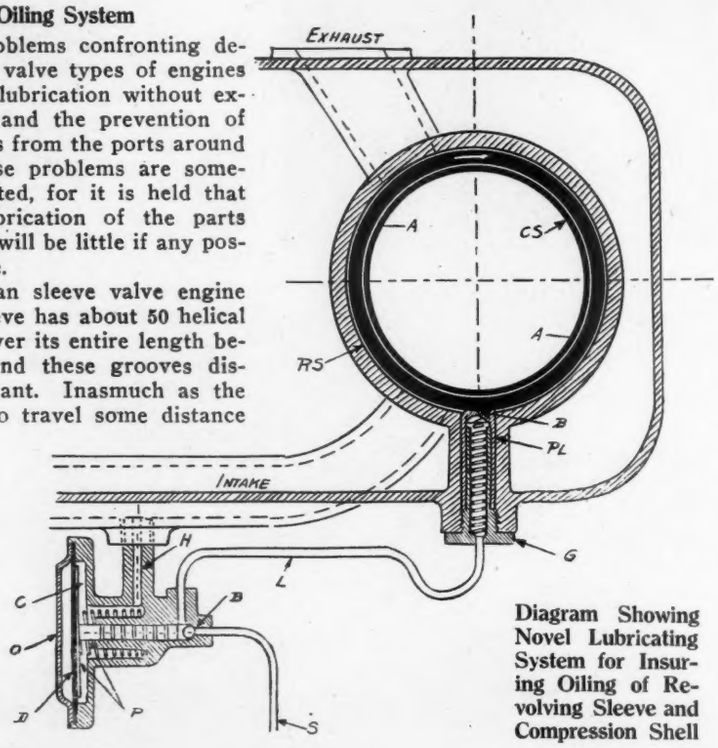
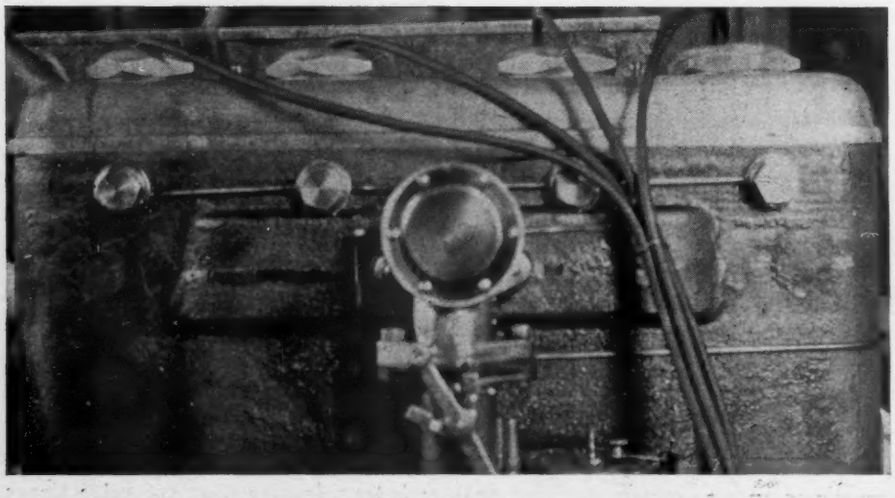


Diagram Showing Novel Lubricating System for Insuring Oiling of Revolving Sleeve and Compression Shell

Oiling Plugs in Heads

The system comprises two basic features, an oil regulator and the oiling plugs. The regulator, which is cast with the intake flange, automatically controls the oil supply to the revolving sleeve, or expressing it in another way, injected between the sleeve and the compression shell. The oil is supplied through the pipe S from the pump, and control is by a ball valve B. The airtight diaphragm D has a piston with rod P. The space C is connected through the hole H with the intake, and the piston P is controlled by the different vacuums produced by the engine under varying load conditions. With the throttle wide open and engine operating under maximum load, the piston P is inactive, as there will be no vacuum produced in the suction line and the lubricant will flow freely through the ball valve B and pipe L to the cylinders through the oiling plugs. With the engine idling, throttle closed, the vacuum forming in the intake manifold will cause the atmospheric pressure through the opening O in the cover of the diaphragm to push the piston rod P against the ball valve B, thus cutting off the oil supply.

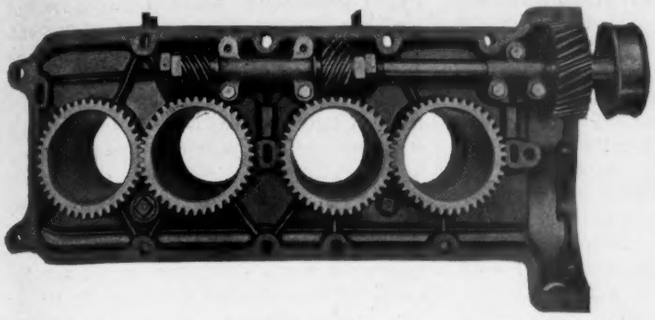


Showing the Diaphragm Controlling Oil Supply and Cylinder Oiling Plugs

Operation of Oiling Plugs

Each of the four oiling plugs has a plunger P L and a guide G with labyrinth packing. The plunger P L is held in contact with the revolving sleeve R S by means of a stiff spring so as to avoid the possibility of compression and exhaust pressures entering the oil line. The lubricant is both injected and drawn between the revolving sleeve and compression shell when the holes A, A, in the revolving sleeve register with the opening B in the plunger during the compression stroke. In this manner the contacting portions or frictional surfaces are efficiently and economically lubricated. Not only is the oil kept free from foreign elements by passing it through two

screens, but the oil spaces and pipe line are kept within small dimensions. The plugs are readily accessible and easily disassembled by displacing the plug head member G. It is stated that in the thousands of miles test that the opening B in the plunger has never fouled because of the suction and injection features of the system. Lubrication of the engine is by conventional method, force feed by gear pump.



Showing Helical Gears on Bottom of Sleeves and Helical Pinions on Shaft-Driving Pinions.

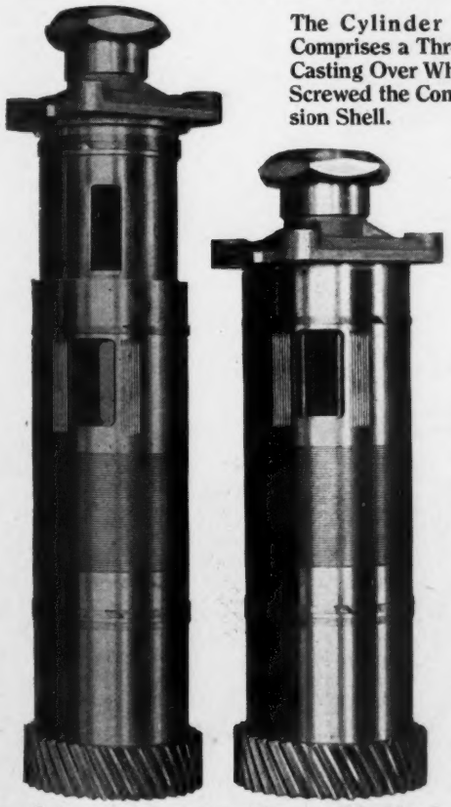
Engine Amply Cooled

The water jacket extends practically the entire length of the cylinder, and the block bears on the crankcase by a flange on the water jacket wall instead of the cylinder wall, as the space below the last named is required by the sleeve valve gear. The construction of the other components, such as the crankcase crankshaft, connecting rods and pistons, does not depart from conventional practice. The crankshaft is partly balanced by extending the arms adjacent to the main bearings an equal distance beyond the main journal in both directions, a construction obtaining a very rigid crankshaft without excessive weight.

Specifications and Dimensions

The weight of the engine is 581 lb., cooling is by a centrifugal pump and a three-point suspension is utilized. The diameter of the flywheel is 16 in.; its periphery is machined for starting motor when specified, and is regularly supplied for cone or multiple disc type of clutch and with a No. 3 S. A. E. bell housing when desired. An S. A. E. standard flange permits of use of any standard type of ignition. The length of engine from face of fan to rear of cylinders is 30 17-30 in. and over cylinder 22½ in. Distance from center of crankshaft to bottom of engine, 9½ in., and to top of water outlet pipe, 24 7-16 in. From center of front supporting bracket to center of rear bracket is 33 11-16 in.

The Cylinder Head Comprises a Threaded Casting Over Which is Screwed the Compression Shell.



Left: The Revolving Sleeve With Head Partially Raised to Show Comparative Areas of the Ports. Right: The Revolving Sleeve With Head in Place and Showing a Port. Note the Oil Grooves.

Accessibility a Feature

The components are readily accessible, and there are 26 less than in the conventional type of poppet valve. The cylinder heads are accessible by removing the cylinder cover and displacing four nuts to each head which can be readily withdrawn and affording access to the piston heads. Removing carbon is, therefore, a simple operation. The exterior of the engine is remarkably clean, and the short distance the mixture has to travel, coupled with the use of the heat of the engine in assisting the vaporization of the fuel, makes for fuel efficiency. The carburetor is a Zenith attached to an S. A. E. 1½-in. flange, and the magneto utilized in the tests is a Bosch with a variable spark.

Illustrating Compression Shell With Its Slots Obtaining Piston Ring Action

Tests made on a Herschell-Spillman hydraulic dynamometer with the above named equipment showed an output of 26 hp. at 1000 r.p.m, corresponding to a brake mean effective pressure of 82 lb. per sq. in., and 50 hp. at 2100 r.p.m., corresponding to a b.m.e.p. of 76 lb. per sq. in. Production of the engine has begun by the Rochester Motors Co., Inc., and the plans include the manufacturing of an engine with a bore of 4 in. and stroke of 6, also one with a bore and stroke of 3¾ x 5. A tractor engine is also to be produced.

Hinkley Motors Announces New Line

DETROIT, Jan. 2.—After more than a year's service as a source of government supply for Class B truck engines, the Hinkley Motors Corp. announces that, after February 15, it will manufacture and market a full line of engines for the truck and tractor industries.

C. C. Hinkley, former chief engineer of the Chalmers, Olds and other companies, who severed his connection with the Chalmers Co. about two years ago, to enter the manufacturing field at the head of his own organization, in making this announcement, said that the Hinkley Motors Corp. is merely returning to its original plans. Its product was designed and its plant was being tooled for general production when the United States declared war. Mr. Hinkley was one of the engineers chosen by the S. A. E. to aid the Government in standardizing truck design.

The Hinkley plant is at 23rd and W. Fort Sts., Detroit. Mr. Hinkley himself is president and general manager; Alwin A. Gloetzner is vice-president; William A. Fisher is treasurer. The directorate also includes Frederick Fisher, Charles Fisher, L. Mendelssohn and A. Mendelssohn, officers and directors of the Fisher Body Corp.

Highway transportation is dependent on the roads. Boost!

Continental Heavy-Duty Engine, Model B2

By CHESTER S. RICKER

THE Continental Motor Corporation, of Detroit, has just brought out for commercial use a new 4-cylinder power plant that is designed either for truck or tractor use. This engine is a thoroughly tried-out design, having been used during the war period on Class B, 5-ton government trucks. At the present time it is used on the largest trucks made by Acme, Atterbury, Clydesdale, Nelson & LeMoon, Signal and Parker (formerly Stegeman).

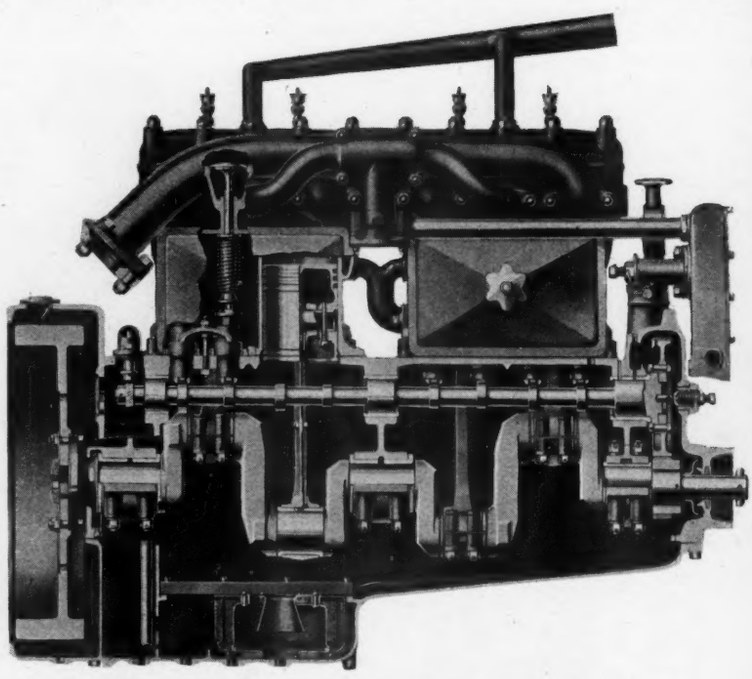
These users of this engine were able to get it before tractor users because they were Continental engine customers on their other size trucks and it was only logical that they employ this engine on the present trucks which they are manufacturing.

The engine is ideally adapted to three-four plow tractors and is recommended by the Continental for this purpose. It has a bore and stroke of 4¼ and 6 in., respectively, which gives it a piston displacement of 425.3 cu. in. The torque and horsepower developed by this engine is given in the accompanying table, its maximum being 55½ at 1300 r.p.m. The normal speed at which this engine would be used in tractors is about 1000 r.p.m., and, when governed to this speed, it shows a brake hp. of 48. At this speed it also shows that with four plows about 106,000 cu. in. displacement per minute per plow is available. The maximum torque provided by the engine is obtained between 800 and 900 r.p.m. and there is only about 1 per cent. less torque provided at 1000 r.p.m.

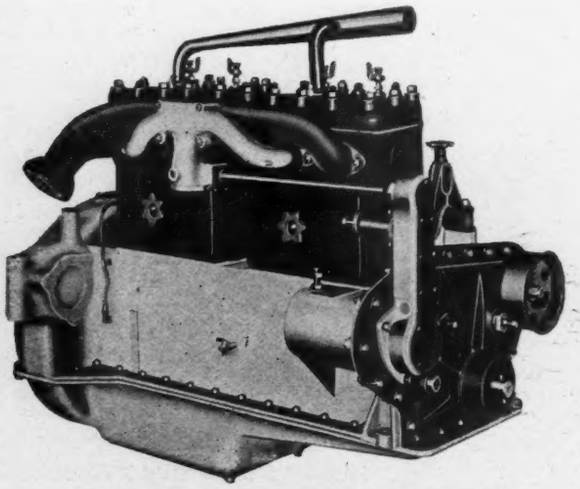
General Design

The principal features of the engine may be outlined as follows: The cylinders are cast in pairs with detachable heads and all the valves are located on the right-hand side. The combustion chamber is L-shaped. The cylinders are bolted to a cast aluminum crankcase, to the bottom of which is attached an aluminum oil pan. The front end of the engine is closed by a cast-iron timing gear cover-plate that is provided with a large diameter trunnion that supports the front end of the engine. At the rear end the crankcase and oil pan are outwardly extended, so as to form a bell housing around the flywheel, which is machined to fit a No. 1 S. A. E. transmission. A governor housing is attached to the cover-plate and interconnected with the intake manifold. A bracket is provided for supporting a 20-in. dia. cooling fan, and a 6⅜-in. dia. by 2-in. wide fan driving pulley is provided. This pulley is driven off the front end of the magneto and water pump drive shaft. The exhaust and intake manifolds, the water pump drive shaft, the water intake and outlet manifolds, water pump, governor and fan bracket are standard equipment.

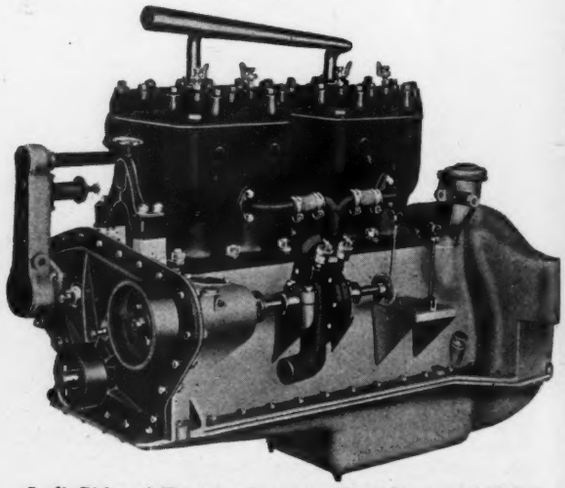
The engine is not equipped with the following accessories, but provision is made so that they may be applied: Magneto, a pad for which is located on the left side of the engine; 20-in. cooling fan; 1½ S. A. E. vertical carburetor; provision is also made for battery ignition by mounting a timing device on the left-hand side of the timing gear case; a mounting for an electric generator, located on the right-hand side of the crankcase; and a support for the electric starting motor on the right-hand rear engine arm. The latter has a No. 3 S. A. E. starting motor pad. The mounting for the electric generator at the front is provided with a bore of 3¼ in., into which



Sectional View of the Continental Engine, Model B2



Showing Manifold Arrangement and Connection of Governor



Left Side of Engine, Showing Mounting and Drive of the Centrifugal Water Pump

the electric generator may be inserted and held in place by means of a set screw.

Cylinder Design

The cylinders are cast in pairs and are water-jacketed between each of the cylinder barrels and provided with a valve spring and tappet pocket on the right-hand side. This is closed by means of a valve spring cover plate, so that the entire valve mechanism is entirely protected from dust and dirt. The cylinders are provided with detachable heads that are held in place by means of 12 studs and nuts. The spark plugs are located close to the outlet water manifold and about halfway between the center of the cylinder bore and the intake valve, so that the intake will pass directly over the ignition points. Pet cocks are located immediately above the center of each cylinder.

A single camshaft is provided and located on the right-hand side of the engine. The timing gear is bolted to a flange, provided on the front end of this camshaft. The cams and the journals of the camshaft are forged integral with the shaft. The valve lifters are made up with roller followers that slide in removable bushings or valve lifter guides. The latter are held in the crankcase by means of a yoke, each of which retains a pair. The valve timing gears are enclosed by a cover-plate that also supports the governor. Five gears are provided: the crankshaft gear, idler gear, camshaft gear, governor gear and magneto and water pump gear.

The crankshaft is a very heavy design and is carried upon three main bearings, the center and rear being the same size and interchangeable. The rear end of the crankshaft is provided with a flange to which the flywheel is attached by means of 6 bolts. The crankshaft bearings are lined with removable bushings, and shims are provided to allow adjustment between the caps and the crankcase. The crankshaft is supported in the upper half of the crankcase and the lower portion, or oil pan, merely serves to support the oil pump and act as an oil reservoir. The crankcase is not divided on the center line of the crankshaft, but at a point 3½ in. below that center line. The crankshaft main bearing caps fit up into the upper half of the crankcase in deep, rectangular slots that not only provide rigidity but act as excellent heat conductors for an engine that has to operate under severe conditions.

The pistons are extremely long and are provided with three packing rings. They are well ribbed in the head. The piston pin is fastened to the piston bosses by means of a set screw. The upper end of the connecting-rod is bushed with bronze. The lower end is provided with removable bushings and the cap is held in place by four connecting-rod bolts.

Lubricating System

A very complete lubricating system is provided. The pump is of the rotary gear type and is mounted in the oil pan. This pump is driven by means of a helical gear attached to the rear end of the camshaft and operating the vertical pump driveshaft. Oil is drawn from the pump at the rear end of the oil pan, through strainers, and then forced through oil pipes under pressure into each of the main crankshaft bearings. From the main bearings it is forced to each of the crank pin bearings, No. 1 being supplied through a passage drilled in the crankshaft from the front main bearing, No. 2 and No. 3 by diagonal passages from the center main bearing, and No. 4 by a passage from the rear main bearing. In addition, an oil pipe connects each connecting-rod bearing with its piston-pin bearing, and oil is, therefore, forced up from the crank pin to the piston pin through this tube, which is bolted to the connecting-rod. In this way the main bearing, crank pin bearings and piston pin bearings are all oiled under pressure.

Engine dimensions

Bore	4¾ in.
Stroke	6 in.
Piston displacement	425.3 cu in.
Gross weight, including flywheel, without accessories	1000 lb.
Suspension, type	3 point

Piston dimensions

Length	6⅛ in.
Piston rings provided	3
Piston ring width	¼ in.

Valve gear dimensions

Diameter	2⅜ in.
Valve seat angle	45 deg.
Valve head thickness	5-16 in.
Valve stem diameter	7-16 in.

Connecting rod dimensions

Length, center to center	13¼ in.
Connecting rod section, maximum,	¾ x 1⅝ x ⅛
Piston pin bushing, diameter	1⅜ in.
Length	2⅛ in.
Crank pin bearing, diameter	2⅜ in.
Length	3 in.

Crankshaft dimensions

Front main bearings, diameter	2⅜ in.
Length	3 in.
Center and rear main bearings,	
Diameter	2½ in.
Length	4 in.

Camshaft dimensions

Shaft diameter	1¼ in.
Front camshaft bearings,	
Diameter	2¼ in.
Length	2⅛ in.
Camshaft bearing, center,	
Diameter	2⅛ in.
Length	1¾ in.
Rear bearing, diameter	2 in.
Length	1⅜ in.

Flywheel dimensions

Material	Cast iron
Outside diameter	19 29-32 in.
Flywheel gear, pitch diameter	19.694 in.
Number of gear teeth	158
Pitch of teeth	8-10
Pressure angle	20 deg.
Bore of flywheel	17¼ in.
Clutch bolt, circle diameter	10¾ in.
Clutch tapped holes, number	8
Size	⅜ x 16 U. S. S.
Bell housing, size	No. 1 S. A. E.

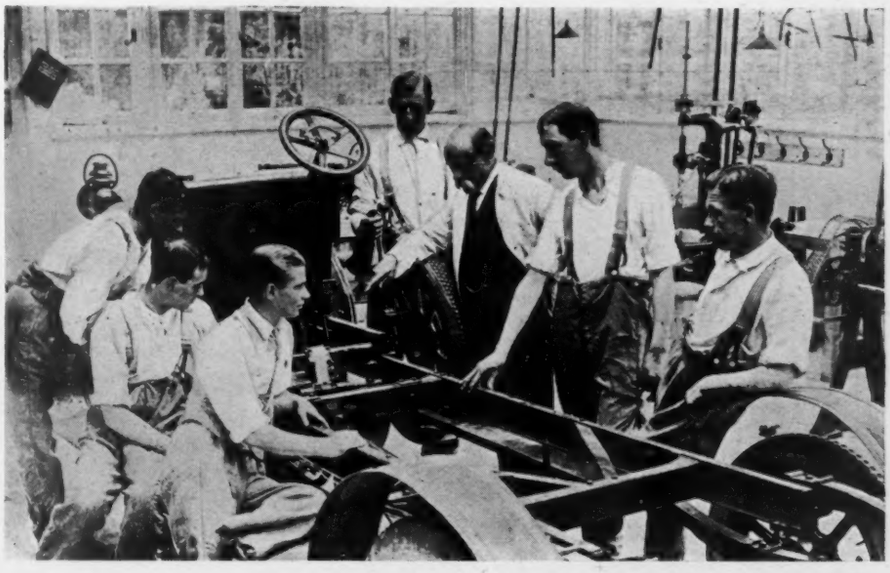
Engine support 3 point

Front trunnion, diameter	5 in.
Width	1½ in.
Rear engine bolts, center to center	26¾ in.
Rear bolt, diameter	¾ in.

Horse Power and Torque Data

R.P.M.	Brake Horse Power	Torque Foot lb.
400	15	230
600	29	246
800	39.5	257
1000	48	253
1200	54	238
1300	55.5	222

Good Roads and Trucks Will Make Freight Congestion Impossible



Disabled Soldiers Learn Motor Mechanics at Queen Mary's Workshop, England

A "Briton" motor chassis is included in the equipment used for instructional purposes. The garage is in charge of disabled men, who, besides being skilled instructors, understand the special problems of the war cripple. America, in line with the program of re-education adopted, has established a course in automobile mechanics at Fort McHenry.

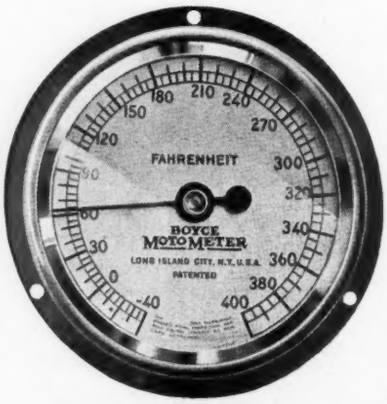
Boyce Distance-Type Moto-Meter

Although the Boyce Moto-Meter, manufactured by the Moto-Meter Co., Inc., Long Island City, N. Y., is well known to the motor truck trade, a great many are not as well acquainted with the "distance" type manufactured by the same company. The great advantage of the distance type is that it brings the instrument closer to the driver's attention as the temperature recording dial can be placed in any convenient position on the dash or inside the driver's compartment. The advantage of the distance type is also apparent when used on trucks with enclosed cabs, especially during inclement weather.

The accompanying diagrammatical illustration shows how the pressure bulb can be attached to various parts of the engine. As will be noted, it can be screwed directly into the water jackets; into the lower parts of the crankcase, thereby recording the temperature of the lubricating oil; or by special part, No. 2096 (see illustration) it can be attached to either the upper or lower hose connection.

This company does not manufacture any specially designed long distance type Moto-Meter for trucks, as any one of its three distance type models is suitable for this work. It recommends the Model B, however, as it has a large 4-in. dial which may be read at a considerable distance. This model registers from 40 degs. Fah. below zero, to 400 deg. above. The finish is black with nickel ring, black pointer and white dial. The cost of this instrument complete with temperature bulb and dial, is $50.

The construction of the instrument is simple. The usual pressure bulb is of solid bronze with no joints. From this bulb, and brazed at the joint, runs the capillary of special cross section, the volume of which is extremely small in relation to the volume of the pressure bulb. The outer end of this capillary is connected to a special helical tube, also of extremely small volume, within the case of the instrument. This capillary is protected by means of a copper tube throughout its entire length. Within the case of the instrument there are but two bearings on which the pointer spindle is mounted. The spindle is driven directly by the helical tube within, thus eliminating all multiplications of motion of the actuating member. The hollow coiled spring in the head of the instrument, together with the small capillary copper tubing, is filled with treated alcohol under pressure. When the bulb is subjected to changing temperatures, this alcohol expands or contracts, moving the minute column of alcohol backwards or forwards in the entire length of the tubing. The hollow spring in the instrument head immediately starts expanding or contracting, uniformly moving the pointer on the dial. The dial is calibrated to the correct temperature of the bulb proper. The instrument will stand 20 per cent. over or under temperatures without affecting its accuracy.



Boyce Moto-Meter, Model B

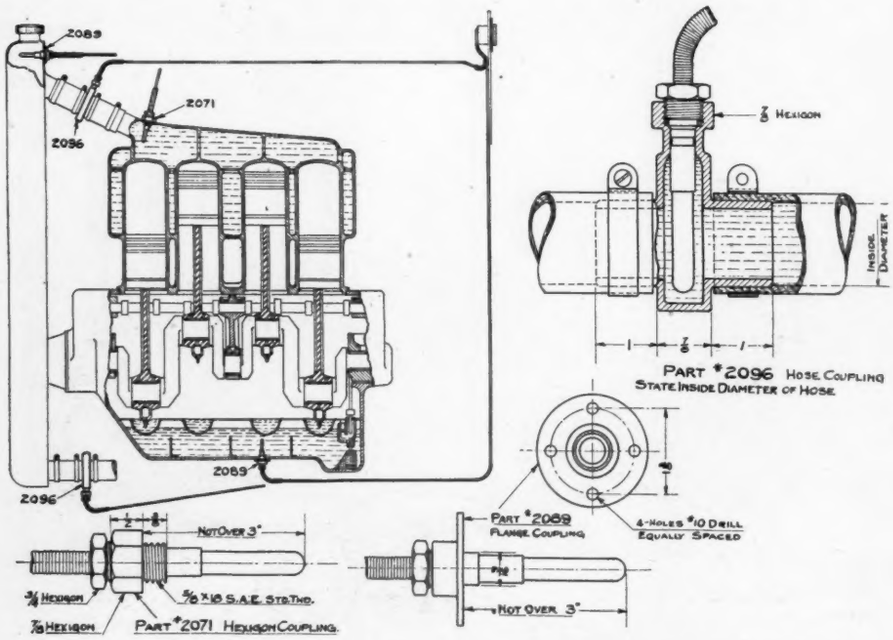


Diagram Showing How the Pressure Bulb Can be Attached to Various Parts of the Engine

Indiana, an All-Work Tractor

The Indiana Silo Co., of Anderson, Ind., has begun a strong campaign to complete the distribution of the Indiana tractor in localities where it is not now represented.

The Indiana tractor was designed and has hitherto been sold with the idea of providing an all-work tractor—one as well adapted to disking, harrowing, dragging, mowing and pulling a binder as it is to plowing. It is a two-wheeled, single-unit, one-man tractor with which the man sits on the seat of the implement and drives the tractor as he would a horse. It weighs no more than one heavy draft horse, but develops 5 hp. at the drawbar. It also does light belt work economically. It will work with the implements that the farmer now has —the ones he has been using with his horses. This cuts down the original investment for tractor and equipment about 50 per cent. No special hitches or equipment of any kind are necessary to employ the Indiana tractor with horse implements.

The tractor is made and marketed in connection with the Indiana silo, for which the company is now signing up dealers in unoccupied territories.

The Alliance Controller

A new device to keep the heat in the vulcanizer constant, by controlling the gas supply to the burner, is being manufactured by the Alliance Controlling Co., of Main St., Alliance, O. It can be attached to any steam vulcanizer and will keep the steam pressure constant by controlling the supply of gas to the burner. The pressure control can be set as desired.

This Device Keeps the Heat in the Vulcanizer Constant

This equipment can be utilized to bring the old type of vulcanizer up to date. It eliminates much attention otherwise necessary to the vulcanizing outfit.

NEW COMMERCIAL CARS

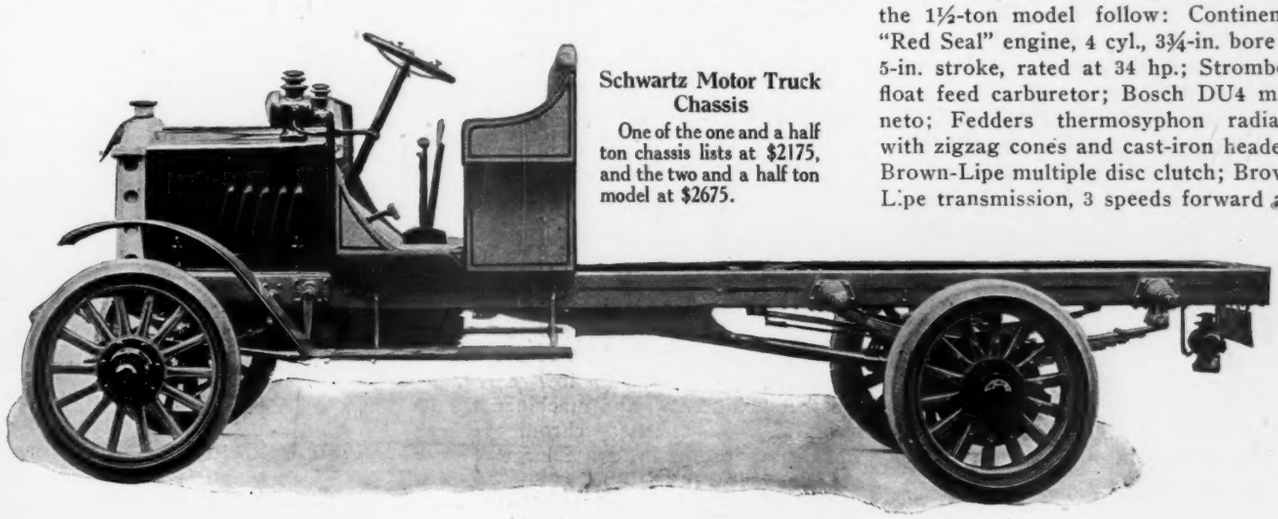
Schwartz Motor Trucks Built in One and a Half and Two and a Half Ton Capacities

THE use of standardized and well known units is the foundation upon which the Schwartz trucks built by the Schwartz Motor Truck Co., of Pearl and Chestnut Streets, Reading, Pa., is based. This company was organized during the early part of last year and even though war conditions interfered with production, the success so far attending this company's venture has exceeded even the expectations of its organizers. The company is now planning for greatly increased production.

That success should come its way, however, is but natural, when it is considered that the company did not start out with the idea of building for a price, but kept in mind the idea that only years of experience coupled with the use of units that have proved their worth would produce for the organizers the business they sought. Harry B. Schwartz heads the company. Mr. Schwartz is a well-known figure in the passenger car and truck industry and his experience dates back to the bicycling days. He has been in the business as salesman, retailer and manufacturer for some 19 years.

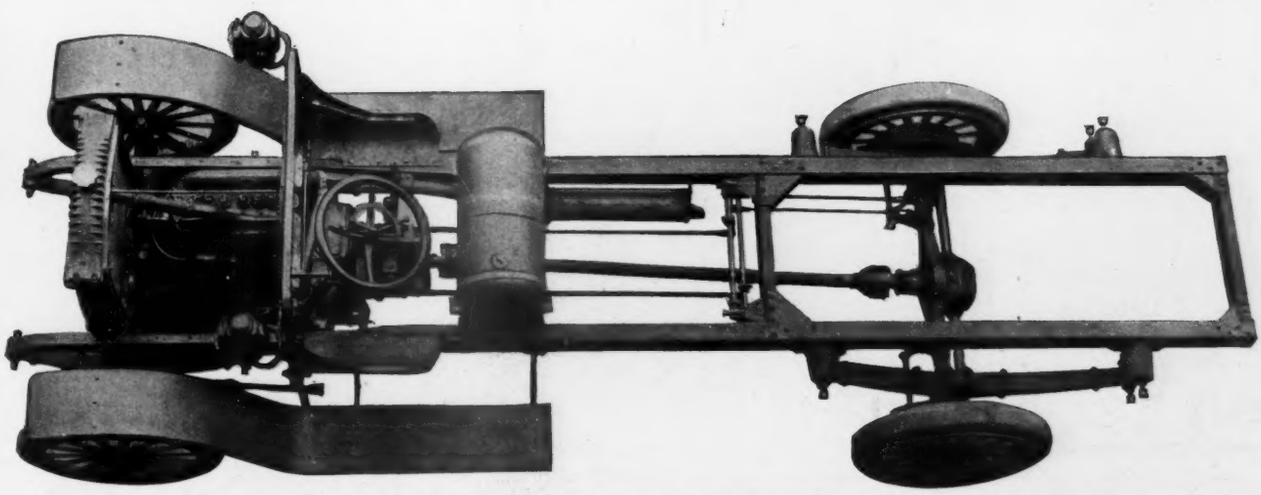
He was first with the Steam Vehicle Co. of America, then for three years with the Acme Co. as an expert, later joining the Acme sales department. He was also sales manager for the same company and with E. S. Youse and the Reading Automobile Co. until he organized the Central Motor Car Co., a retail automobile concern in Reading, and which factory is now used for building the Schwartz trucks. The present plant has available about 2200 ft. of floor space, also an assembly room of some 1200 sq. ft.

The two models upon which this company is concentrating its efforts are a 1½-ton chassis, listing at $2175 and a 2½-ton chassis at $2675. Brief specifications of the 1½-ton model follow: Continental "Red Seal" engine, 4 cyl., 3¾-in. bore by 5-in. stroke, rated at 34 hp.; Stromberg float feed carburetor; Bosch DU4 magneto; Fedders thermosyphon radiator with zigzag cones and cast-iron headers; Brown-Lipe multiple disc clutch; Brown-Lipe transmission, 3 speeds forward and



Schwartz Motor Truck Chassis

One of the one and a half ton chassis lists at $2175, and the two and a half ton model at $2675.



The Schwartz Chassis Includes Continental Engine, Brown-Lipe Transmission, Torbensen Internal-Gear Drive Rear Axle, M. & S. Differential and Other Well-Known Standard Parts

reverse; Timken front axle; Torbensen internal gear drive rear axle; internal expanding and external contracting brakes, 15 x 2½ in.; M. & S. differential; semi-elliptic springs, 2½ x 40 in. front, 3 x 54 in. rear; Schwarz heavy artillery wheels, 34 in. front and rear; Parish pressed steel, heat-treated frame, with 5⅝-in. side members; Ross irreversible 18-in. wheel; 20-gal. seamless welded steel cylindrical tank under driver's seat; drive by heavy propeller shaft, with Hartford universal joints at each end; Ross 18-in. irreversible steering wheel; control levers in center, with spark and throttle levers on top of steering wheel; also foot accelerator. The wheelbase is 140 in.; tread 56 in. Tires are 34 x 3½ in. front, 34 x 5 in. rear, Firestone. Chassis length is 206 in. over all, 112 in. back of driver's seat. The speed is controlled by a Pierce governor, maximum speed 18 m.p.h. Weight of chassis is 3500 lb. Standard equipment includes two side and tail oil lamps, horn, tools and driver's seat.

Two and a Half Ton Specifications

Continental engine, 4⅛ x 5¼; Fedders radiator with gear driven centrifugal water pump; 18 x 2½-in. brakes; 36-in. wheels; frame has 6 3-16-in. side members; 146-in. wheelbase; 36 x 4-in. tires front, 36 x 7-in. rear; chassis length 219 in. over all, 125 in. back of driver's seat. All other specifications are the same as for the 1½-ton model.

New Stewart Model 10, Three and a Half Ton Chassis at $3500

A RECENT addition to the Stewart line of motor trucks, built by the Stewart Corp., Buffalo, N. Y., is the model 10, 3½-ton chassis, listed at $3500. This model is characterized by a unit power plant, a heavy frame, a two-piece drive shaft, three universal joints and sturdy construction in general.

The conventional three-point suspension is used for the power plant. The engine is a Continental 4½ x 5½-in., 4-cylinder, rated at 45 hp. It has L-head cylinders, cast in pairs, a three-bearing crankshaft and a constant level oiling system, operated by a double action plunger pump. Ignition is by Eisemann high tension magneto with fixed spark and carburetion cared for by a Zenith, vertical type, 1¼-in. carburetor. It is controlled by a foot accelerator and has a choke to assist starting. The engine is governed by an automatic type governor, driven through spiral gears and solid straight line shafts.

The cooling system has a cast tank, armored type radiator, with vertical tube cores. Water circulation is by pump, aided by an 18-in. steel fan, mounted on heavy duty ball bearings and driven by 1½-in. flat belt. The transmission, of the selective, sliding gear type, has 4 speeds forward and 1 reverse. The shafts are made of alloy steel, double heat-treated, and the gears are of heavy nickel. Annular ball bearings are used throughout. The reduction on high gear is 10:1, and on low 48:1. The clutch is a multiple disk dry plate type, Raybestos against steel.

Front and Rear Axle

The front axle is a drop forging, I-beam section, of nickel steel, heat treated and has hardened and ground spindles and knuckle pins, and large taper roller bearings in the hubs. The rear axle is internal gear drive, the low carrying member being solid, and machined from bar stock, heat-treated, chrome nickel steel; the wheel spindles of large diameter being integral.

The frame is pressed steel channel, 9-32 in. thick, 7 1-16 in. deep, and 3¼ in. wide. Its total length is 243 in., and it has 3 cross members, the front one being removable. The frame will accommodate 12-ft. bodies.

The wheels are of the cast steel, hollow spoke type, and are mounted on special hubs. The tires upon the wheels are solid pressed-on type, 36 x 5 in. on the front and 36 x 5-in. dual on the rear.

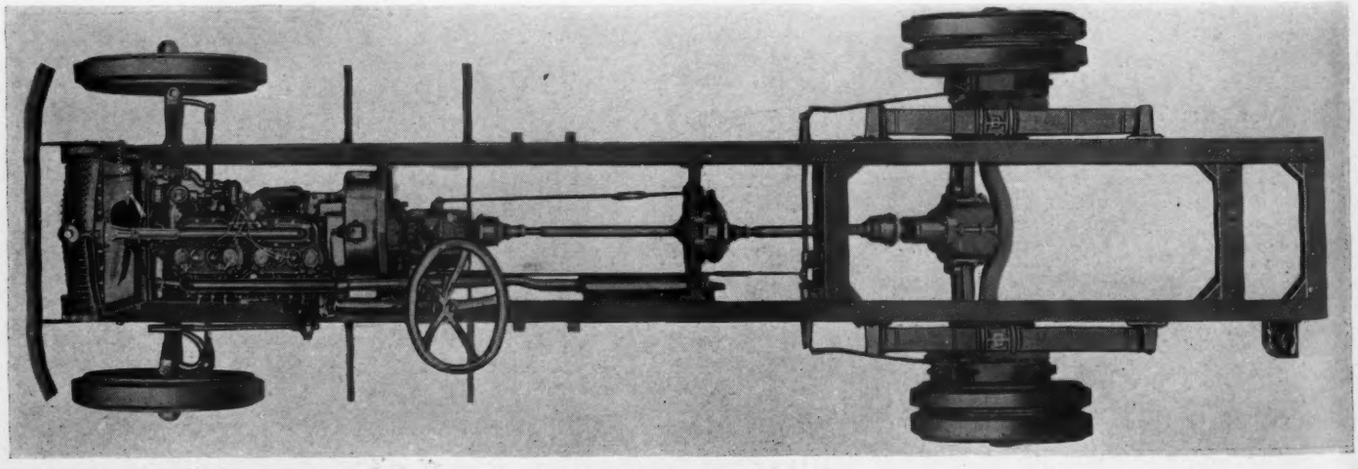
The Brakes

The service brake is of the external contracting type, mounted on the rear wheel drums, and is controlled by the foot pedal. The drums are 20 x 3 in. and are lined with Raybestos. The counter shafts to these are equipped with oilless bushings to eliminate the necessity of oil cups. The emergency brake is of the external contracting type and is mounted on the drive shaft in the rear of the transmission, and is supported from a heavy cross-member. It has double shoes, Raybestos lined, operating on the drum, of 9-in. diam. and 5 in. wide. This brake is controlled by a hand lever, it, together with the gear shifting lever, being mounted in the center of the chassis.

The front springs are semi-elliptic, 41 x 2½ in., and are equipped with oilless bushings. The rear are 54 x 4 in. and similarly equipped. The steering gear is of the worm and nut type with a wheel 20 in. diam. located on the left side. The wheelbase of this chassis is 165 in. standard, although a special long base of 185 in. can be had at a nominal extra cost. The front tread is 58 in. and the rear 78 in.

The gasoline tank, under the driver's seat, has 20 gal. capacity, is round and of heavy gage steel with welded joints and seams, supported on malleable iron saddles and secured by steel straps.

The February issue of The Commercial Car Journal will contain the Western half of the Truck Specifications.

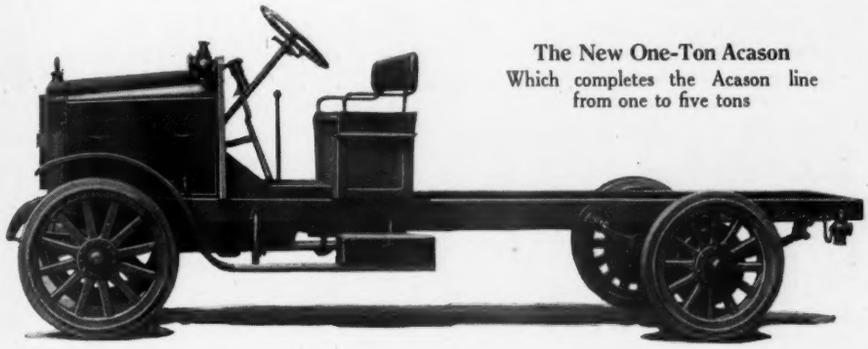


The Stewart Three and a Half Ton Model. Note Heavy Frame Construction; Emergency Brake on the Drive Shaft; Unit Power Plant, Etc.

Acason Introduces One-Ton Model

THE Acason Motor Truck Co., of Detroit, announces a 1-ton capacity truck as an addition to its line for 1919. It will continue to produce trucks with a capacity of 1½, 2, 3½ and 5 tons and light and heavy duty commercial tractors. In making the announcement, H. W. Acason declares that this model would have been put on the market some time ago, but was held up because of the war.

The Acason one-ton will have a wheelbase of 144 in., and the loading space back of the seat to the end of the frame will be 118 in.



The New One-Ton Acason
Which completes the Acason line from one to five tons

A Buda engine, 4-cylinder, will be 3-point suspended. The bore is 3½ in., the stroke 5⅛ in. There is a 3-bearing crankshaft, 2 in. in diameter. The cylinder block is detachable. The lubrication is by positive pump system with constant oil level.

The carburetor is optional, Schebler or Rayfield, and the ignition is from the Eisemann high-tension magneto. Acason will use their special truck radiator with radiator guard.

The clutch is a disk completely enclosed in bell housing and the transmission a Fuller selective sliding gear type. The propeller shaft is a 3-joint shaft with self-aligning center bearing.

Timken-Detroit David Brown worm axle, one-piece housing with Timken bearings throughout constitute the rear assembly. The front axle is a drop-forged I-beam. The brakes are expanding on the rear hubs and are manufactured by the Timken-Detroit Axle Co.

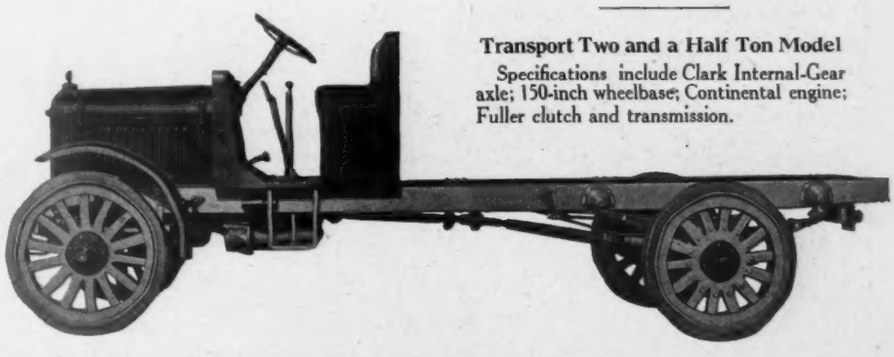
The frame is of pressed steel, 4 9-16-in. side section, with 3½-in. flange and of 3-16-in. material. It is 34 in. wide and inswept to 31 in. between the front wheels. The frame overall is 202¾ in.

The springs are semi-elliptic front and rear. The steering gear is irreversible worm and nut type with a 20-in. hand wheel, right-hand drive. The gas tank has a capacity of 15 gal. Wood artillery wheels with S. A. E. bands are employed, and solid tires 36 x 3½ in. front and 36 x 6 in. single rear are standard equipment. Pneumatics, 38 x 6 in., are furnished at an extra cost.

The regular equipment includes the Boyce Motometer, three oil lamps, horn, front fenders, jack, oil can and complete set of tools. Production of the new model is under way.

Transport Truck Model 50 Goes Into Production

The Transport motor truck, built at Mt. Pleasant, Mich., by the Transport Truck Co., has now gone into production. The new company starts building under most auspicious circumstances. It was expected that they would be able to start production about July, but owing to war time restrictions and the inability to get material, the event was postponed. However, the period of waiting has been utilized to advantage. Several of their trucks have been tested out under all kinds of working conditions, so that now the machine is a proved article and not in the experimental stage. The new truck is rated at 2½ tons capacity. The specifications include Clark internal gear drive rear axle; Continental engine, 4⅛ by 5¼ in.; Eisemann G4 magneto; duplex centrifugal governor; Stromberg carburetor; Fuller clutch and transmission; pressed steel frame; Columbia front axle; Jacox steering gear; Prudden wheels and 150-in. wheelbase. The truck is equipped with tool kit of high grade tools, powerful jack, oil lamps located inside of dash, also tail lamp, motometer and odometer. Tires are 36 x 4 in. front, 36 x 6-in. rear, Goodyear solids; gasoline tank of 20 gal. capacity.



Transport Two and a Half Ton Model
Specifications include Clark Internal-Gear axle; 150-inch wheelbase; Continental engine; Fuller clutch and transmission.

Chinese Buy Nash Quads

KENOSHA, WIS., Jan. 6.—Two Nash Quads have recently been purchased by the Chinese government for service at the Kiangnan Arsenal. These orders were placed after a visit to the plant at Kenosha, Wis., by the Chinese government commission. Two delegations from Japan have also recently made a visit to the Nash factory. There are several Nash Sixes at Penang and Singapore in the Straits Settlements, as well as three Nash trucks, and Java is using Quad trucks for government work.

Sunderman Announces New Carburetor

NEWBURGH, N. Y., Dec. 31.—The Sunderman Corp. announces that it is soon to put on the market a plain tube, floating venturi carburetor of new design. This carburetor is designed to handle heavy fuel. It is the carburetor that was entered in the Economy Contest managed by the New York Herald, last October, and which made a creditable record in that contest with both gasoline and kerosene.

Acason 1919 Chassis Will be Shipped Painted

DETROIT, MICH., Dec. 15.—In announcing its 1919 production of motor trucks the Acason Motor Truck Company declares it will ship its chassis painted in the future. The chassis will be painted a pigskin brown, striped a dark brown and trimmed in brilliant red. In general specifications the product contains the same material and units, although there are a number of minor improvements. The Boyce Moto-meter becomes standard equipment.

The capacity of the models to be constructed will be 1½, 2, 3½ and 5 tons. The prices will not be changed for at least six months.

Desires Agency for American Cars in France

PARIS, Dec. 4.—Antoine Mourre, 39, Rue De Prony XVIIe, Paris, France, announces that he wishes to take the exclusive agency for France of an American passenger or commercial car.

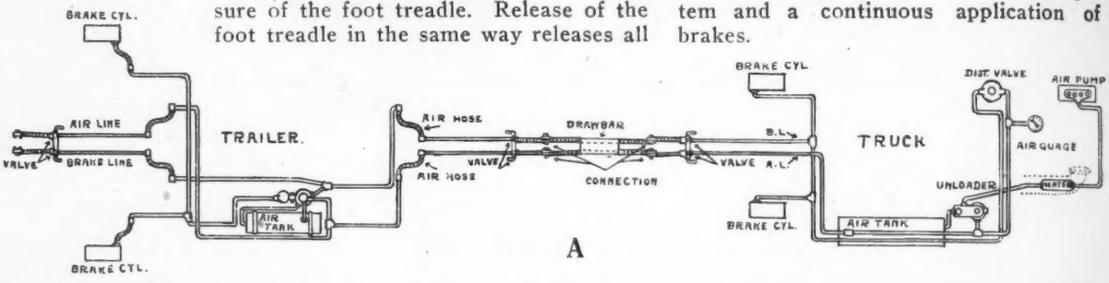
The Parker Air-Brake System as Applied to Motor Trucks and Trailers

IN our December issue we described the 1500-mile trip of a Walter tractor and Troy trailer equipped with the Parker air-brake control system. At that time constructional details and drawings were not available. Since then the accompanying drawings have been received from the Parker Appliance Co., 2619 Vermont Ave., N. W., Cleveland, Ohio, and which should be sufficient to give our readers a clearer understanding of the principles of construction of this novel control system.

Referring to the illustration of the tubing diagram (A), the same is self-explanatory. The air is conducted from the air pump through a small heater in the exhaust pipe to the unloader and storage reservoir on the truck or tractor. The unloader (B) shown in section serves to relieve the pump when the reservoir is brought to working pressure, which is 90 lb. to the inch. But a few seconds are required to bring the storage system to working pressure, and then the air is directed from the storage system to the unloader valve through a diaphragm operated valve and the pump is permitted to revolve unloaded. The unloader is so designed that with the storage system to working pressure there is a back pressure in the pump of from 8 to 15 lb. per inch, depending upon engine speed, which is just sufficient to prevent piston slap at high engine speed, as the pump is driven at engine speed.

From the truck storage tank air is conducted to the distributing valve (C), also shown in section. Air is admitted at port 1 and with a depression of the foot treadle 2, is conducted to the brake cylinders, as shown in the tubing diagram. The amount of air permitted to enter the braking cylinders is determined by the degree to which the foot treadle is depressed. As the treadle is depressed, air is admitted to the brake cylinders and the pressure raises the piston contained in this valve, the inlet port is closed and pressure is held in the braking cylinder, depending upon the pressure of the foot treadle. Release of the foot treadle in the same way releases all or a portion of this air and reduces the pressure. The valve is so designed that the action is closely regulated and is practically instantaneous. Very much the same action results from the depression of this foot treadle as results from the depression of the accelerator, to the extent that any definite depression results always in uniform performance and eliminates the necessity of estimating the amount of air admitted to the brake cylinders.

The brake cylinder construction is shown installed on the trailer, and the usual uniform brake cylinders are used on both truck and trailer installations. The cylinders may be mounted for any style of brake construction, either high speed shaft brakes or wheel brakes. The air is conducted through the truck, through the terminals at the rear of the truck and on the drawbar to the trailer through flexible rubber hose connections and through a quick coupling connection or terminal (D) as shown. These terminals separate in case of a broken drawbar or disconnected drawbar, without damage. One line runs through the truck storage tank to the trailer tank (see illustration E) through the valve mechanism shown in section. A line also runs through the brake line to the trailer, as shown. Two lines are used on all motor truck work where not more than two trailers are to be handled, as with a two-line construction trailer tanks are charged continually in case of extensive brake application, such as mountain work necessitates, where the brakes are often in use for a considerable period of time without release. This eliminates any chance for damage to trailer tanks in case of a slight leak in the trailer system and a continuous application of brakes.

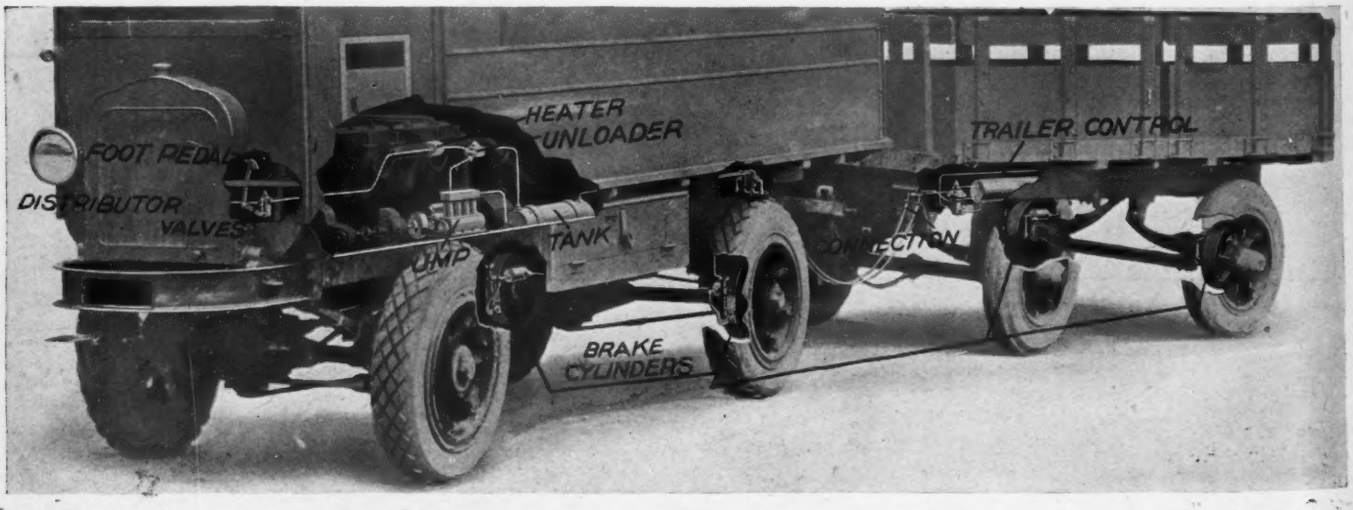


A

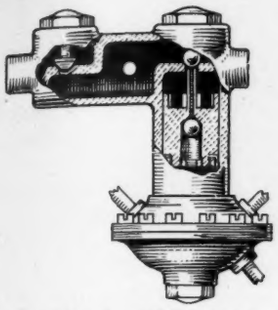
A. Tubing Diagram Showing Layout of Units and Connections.

For caterpillar tractors and units handling a large number of trailers, a train-line construction is used, which involves a single connection of various units. This construction is not shown herewith, but complete details will be furnished in the near future.

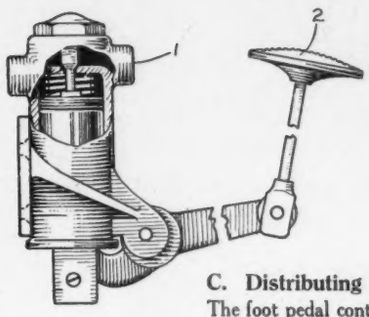
The trailer unit construction (E) is mounted directly on the tank and the tank is mounted on the side member of the frame of the trailer. The air from the storage tank in the truck is conducted to the trailer valve unit through the port 1, and passes directly into tank, which contains baffles to separate any possible oil or moisture which might



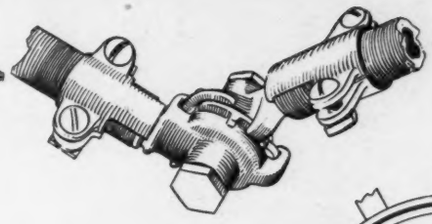
Skeleton View of Truck and Trailer Equipped With Parker Air-Brake System



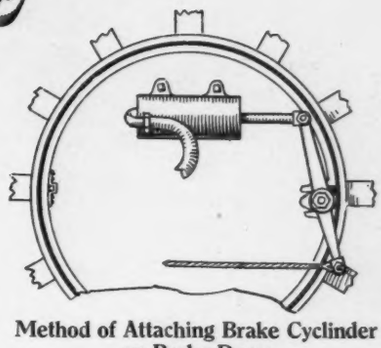
B. Unloader Which Acts as a Relief Valve



C. Distributing Valve
The foot pedal controls the application of the brakes



D. Quick Coupling Terminal Connecting Truck and Trailer.



Method of Attaching Brake Cyclinder on Brake Drum
Wire rope leads to regular brake pedal

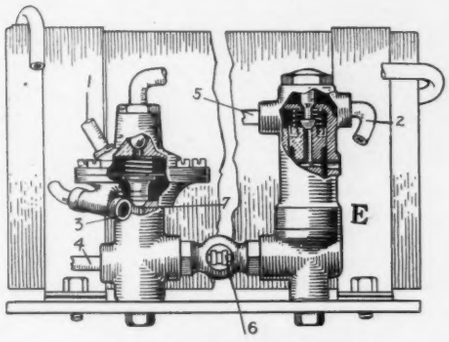
creep into the line. The air is then conducted from the tank into ports 2 and 3. The brake line from the truck is connected into port 4 and the line is run through port 5 directly to the brake cylinders on the trailer. The valve 6 is a bypass valve, designed to relieve the brake pressure when the tractor or truck is disconnected from the trailer. The depression of the foot treadle and the distributing valve admits air to the cylinders and also to the port 4, and also each trailer on the train. This actuates the valve on each trailer to admit air through the port 5 into the brake cylinders on the trailers by the amount of air admitted, and consequently the amount of air obtained in the cylinders being determined by the pressure in the line from the truck, which in turn is determined by the amount of the depression of the foot treadle.

In case of a broken line between truck and trailers or in case of disconnection of the trailers from the truck, air is admitted through the port 7 to the valve mechanism to admit air into the brake cylinders on the trailer and lock the brakes. In applying the brakes to the train the air admitted to the trailer brake cylinders is, of course, drawn from the trailer tanks and not from the storage system on the truck. This necessitates but a small quantity, the air being directed through the brake line from the truck to the trailers, and makes a quick acting brake. With two trailers in the train the braking action and release is practically instantaneous and uniform in the entire train.

The whole equipment is designed especially for motor truck service, is not cumbersome, and does not add more than 50 lb. to the weight of the entire unit. As small quantities of air are handled, the pump may be of four-cylinder type, and will give very satisfactory results. It is not necessary to use a tubing heavier than 5-16-in. O. D. Tanks are of 600 cu. in. capacity and weigh less than 10 lb. The tubing is installed in such a way that there is no trouble due to vibration, practically all the tubing being installed on the frame and clipped with fibre clips in such a manner that there is no danger of chafing, and at the same time the system allows sufficient flexibility so that no trouble is experienced through crystallization.

The 1500-mile trip of the unit, which was described in the December issue, demonstrated very clearly the practicability of long distance transportation of heavy loads in a lapse of time which approximates express speed and at a cost which permits profitable operation at approximately express rates. This unit has been in continual service since this trip, under the most remarkable conditions, performing over passable roads with loads ranging from eight to sixteen tons. In commenting on this trip, A. L. Parker, president of the Parker Appliance Co., states "that my observation on the Akron-Boston run and subsequent demonstrations have convinced me that the most satisfactory service will be obtained from such a train unit when it is possible to transport the trailers over approximately a 100-mile division, in which case a tractor will be operated approximately a 100 miles, and then the trailers will be connected to another tractor and continued on the trip. The success of this method of transportation depends, to a great extent, to the standardization of drawbar heads, couplings and brake connections, so that various trailers may be attached on any make of truck or tractor.

"A successful development of long distance transportation will undoubtedly depend upon organization and co-operation among various transportation companies. The co-operation of truck and trailer manufacturers to affect standardization is also necessary."

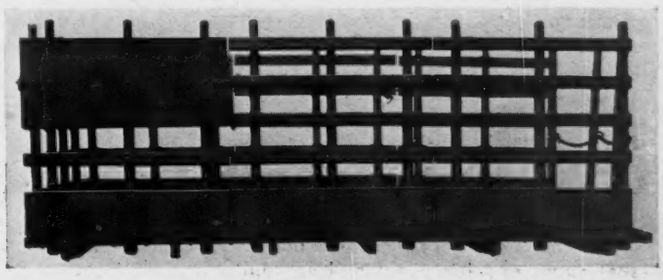


E. Trailer Unit and Tank

Metropolitan Truck Bodies in Twenty Styles

The Metropolitan Body Co., of Bridgeport, Conn., makes a specialty of high-grade commercial car bodies and at the present time is offering twenty different types of standard bodies to choose from. Capacities range from 1 to 7 tons and the sizes run from 10 to 16 ft. long and 3 to 6 ft. high. The line consists mostly of platform rack bodies and several closed jobs, one or two moving van bodies and two styles of dump bodies which are attached to hydraulic hoists. All these types are carried on hand for immediate delivery at the factory in Bridgeport as well as at the New York branch, at 246 W. 65th St., and at the Boston branch, 194 Brighton Ave.

This company is co-operating very extensively with the dealers in its vicinity and makes a point of quick service as the standard bodies are carried in stock at the various distributing points, thereby making it possible for the dealer to send a chassis to the branch house and

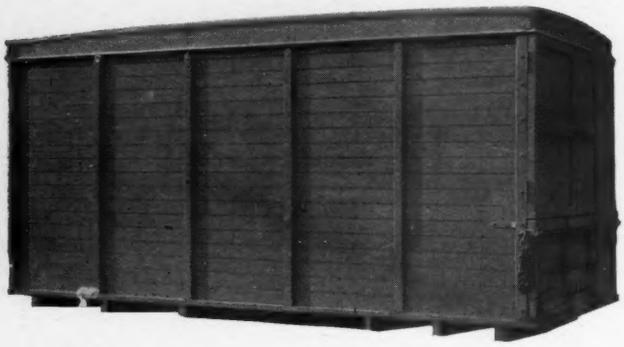


Metropolitan Stake Body No. 12

Capacity, one to two tons. Outside dimensions, 14 feet long, 6 feet, 6 inches wide, 4 feet high. Sides are removable in three sections. The front section back of the driver's seat is stationary. The rear end is equipped with removable stakes and chains.

have a body put on within four hours' time. Whenever a truck dealer cannot send the chassis to any of the branches or to the main factory, this company will ship direct to the dealer from the factory, as all the bodies are easy to knock down and ship crated. Truck dealers and distributors are given a liberal trade discount.

All Metropolitan bodies are made of hardwood only. The frame, cross members and sub-sills are made of oak, while the stakes and slats are made of either oak or ash. The floors are of hard maple. All lumber is thoroughly seasoned as a supply is carried in stock at all times. The bodies are well ironed throughout. The accompanying illustrations show two of the many styles that this company produces.



Metropolitan All-Enclosed Body, No. 28

The inside dimensions are 13 feet 7 inches long by 6 feet 7 inches wide, and 6 feet 3 inches high at the lowest point. The capacity is from three and a half to five tons.

The Detroit Weatherproof Truck Cab

Detroit weatherproof cabs, built by the Detroit Weatherproof Body Co., S. Saginaw St., Pontiac, Mich., are made of wood and heavy gage metal, which makes for strength and lightness. This combination prevents what is known as drumming.

A feature of this cab is the patented door, which is both convenient and light. When desired it can be slid up into the top of the cab where it is out of the way when not in use. The door and window frames are made of spring steel covered with leather and run in metal channels ⅞ in. deep. The channels extend into the top where the doors slide and are held in a flat position out of the way.

The windows in this cab slide up and down, so that if the driver wishes to signal traffic following him, he can do so by raising the window slightly and extending his arm through the opening.

The windshield is divided into two sections, so that if the driver desires just a slight opening he can raise the vision part of his shield, the other half remaining tight. The advantage of this is obvious, since it is almost essential in certain kinds of weather to raise the windshield in order to get a clear view ahead. This can be done with the least amount of discomfort.

The cabs are roomy, afford plenty of seat room and leg room and are upholstered in a manner to give comfort to the driver. The corners of the cab are reinforced with ¾-in. angle iron from top to bottom.

The advantages of this weatherproof cab are apparent at a glance—for stormy weather it is completely enclosed and absolutely weatherproof—for pleasant weather it can be converted in less than a minute into an open cab, affording all comfort possible under those conditions.

The February issue of The Commercial Car Journal will contain specifications of all the trucks built in the West

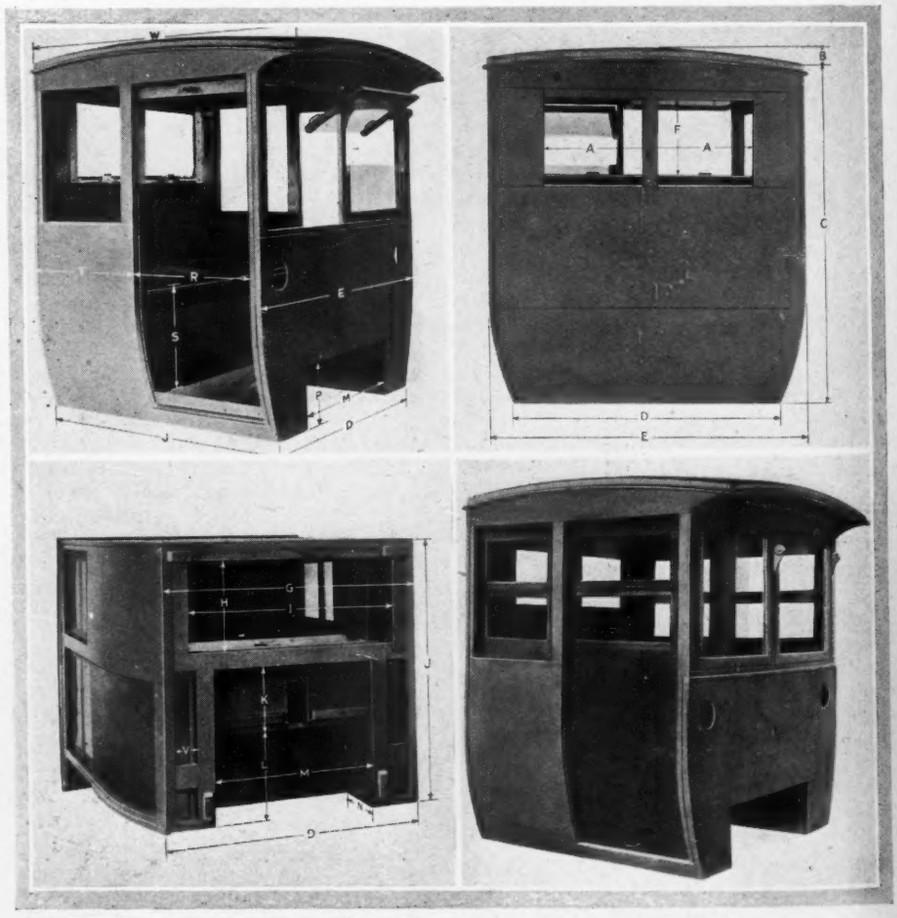
Stewart-Warner Wins Suit

CHICAGO, Jan. 2.—Judge Westenhaver, of the United States District Court of the Northern District of Ohio, has handed down a decision at Cleveland in favor of the plaintiffs, in the suit of Webb Jay and the Stewart-Warner Speedometer Corp. against the Sparks-Withington Co., involving infringement by the Sparks-Withington Co. of the Jay Vacuum System, or Stewart Vacuum Tank.

The decision of Judge Westenhaver grants injunction and accounting of damages and profits against the Sparks-Withington Co. for said infringement.

Union Switch & Signal to Build Truck Engines

SWISSVALE, PA., Dec. 27.—The Union Switch & Signal Co. has recently completed a government contract for airplane engines, and contemplates using the facilities and experience thus gained in the manufacture of engines for truck and passenger car service. This company has recently erected buildings of fireproof construction and has ample capacity for quantity production.



Dimensions of Detroit Standard Cab for Commercial Cars

A, 17"; B, 2¼"; C, 64"; D, 46"; E, 56"; F, 15"; H, 15" or 16", at option; I, 38"; J, 47"; K, 27"; L, 25"; M, 29", changed to suit; N, 10", changed to suit; P, 10", changed to suit; R, 22"; S, 19", desired height; T, 22½"; V, 4"; W, 54"

Showing the Farmer on His Home Ground

A Selling Plan That Sold Trucks and Incidentally Developed a Bunch of Prospects. Educational Plan to Interest Farmers in Trucks

By C. P. SHATTUCK

DEALERS in the large cities are beginning to realize the possibilities afforded by the agricultural districts within their territory or that controlled by them through their sub-agents. The exploitation of commercial cars in farming districts is not new, but to use the expression of a large distributor who has made an intensive study of the subject, "the surface is not even scratched."

The conventional sales methods, those obtaining success in other industries, are not always applicable when selling the farmer, particularly the man of limited means who weighs every dollar carefully before putting it into circulation. What the doubting farmer wants to know is, will the truck do the work of horses? The average farmer admits that the truck is superior to the horse on the highways, but when it comes to work on the farm he wants to be shown.

With this thought in mind, R. Duval Dumont, vice-president of the Winther Motor Truck Co., of N. Y., Inc., planned and executed a successful educational campaign among the farmers of Long Island.

Planning the Campaign

Mr. Dumont did not wait until spring when the farmer generally is very busy but started his campaign in October. The farmers' campaign, as it was called, lasted about three weeks and was planned about the time the potato crops were being harvested in Suffolk County. A well defined route was mapped out, which included a chain of towns, etc., between New York City and Riverhead, L. I., a distance of approximately 130 miles as the crow flies.

Through the co-operation of the grangers' associations, etc., a list of farmers was obtained and these were sent notices, stating that on such and such a day the truck that would "Go Any Place a Horse Truck Would Go," would be in their town and would substantiate the claims made for it. This publicity was backed by a page advertisement in a Long Island agricultural paper, calling attention to the fact that Farmers' Special, a 1½-ton Winther, four-wheel-drive truck was especially designed for agricultural use. The copy included the specifications of the truck and emphasized that the tread of the truck was the same as the farmer's wagon.

Claims Made Were Substantiated

A crew of three men accompanied the truck—two salesmen and a driver—and the schedule was maintained. Invariably when the truck arrived at a farm it was found that through the "farmers' wireless system" many were on hand to witness the work of the truck for which such extravagant claims were made. An incident illustrates the character of the demonstrations suggested by farmers.

Arriving at one farm the owner when asked what he would like to see the truck do, replied, "Take it across that meadow." The grades were severe and traction poor but the truck came through successfully. When the salesman suggested taking the truck into a ploughed field where the soil was soft and carting out a couple of tons of potatoes, the farmer would not hear of it. "If you go in there," he said, "and load up, I'll have to unload your truck and besides you won't be able to get out. And I don't want that truck stuck in my field 'cause I need every foot of ground."

But the salesman came back with this proposition, "If the truck can't come out with the load under her own power I'll leave her for you to sell for junk, and it's quite a piece of change for you if we don't make good." To the bystanders it looked liked a gift but the grins faded when the truck, loaded with 71 bags of potatoes, which weigh about 60 lb. each, pulled out of the field. "Now where do you want them put?" remarked the driver. "In the barn," replied the astonished farmer, and to make the demonstration more effective the truck was driven across the fields instead of taking the beaten path. The farmer was sold.

Conserves Time Harvesting Potatoes

Another incident demonstrates how it is possible for a truck to save time in harvesting potatoes. In this instance the truck followed the digger and not only carried a greater load than would the horse-drawn equipment, but in much less time. In the campaign the truck was subjected to severe tests, for the farmers proved very ingenious in suggesting "stunts." As the truck proceeded, the salesman naturally picked up a few points through executing the suggestions of the farmers at places previously visited and would, without being asked, put the car through its paces.

At Riverhead the truck demonstrated the practicability of the trailer. A farmed had 5500 lb. bagged in his wagon and it was attached to the truck which carried a capacity load, and the load was hauled to the railroad for shipment. In this instance the truck was loaded in the field but the trailer was at the roadside.

Missionary Work Profitable

The missionary work proved profitable, as one truck was sold and another ordered as well as a list of good prospects obtained. While the demonstration of trucks should not be encouraged under average conditions, Mr. Dumont believes that demonstrations must be made to educate a certain class of farmers who cannot be reached through ordinary sales channels. The educational campaign will be closely followed up early in the spring when it is expected that the company will reap its harvest in sales.

Aids Sub-Agent or Dealer

There is another angle to such a campaign, particularly with reference to the distributor or dealer desiring to place agencies or to co-operate with same, and that is it introduces the truck in a

Hauling Nearly Five Tons of Potatoes to the Railroad Was One of the Convincing Proofs of the Practicability of the Truck and Trailer for the Farmer

practical manner and provides prospects for a follow-up campaign by the sub-agent as well as gives the sub-agent an idea on how the experienced salesman handles prospects. Indications point to an intensive truck selling campaign in the farming districts, a field possessing wonderful possibilities and one that has been partly developed by the Rural Express as well as other movements tending to move the products of the soil by motor trucks.

Studebaker Two-Wheel Trailer

The Studebaker two-wheel trailer, especially adapted for hauling logs, lumber, piping, etc., and designed to stand the rough knocks of heavy loads and poor roads, is being manufactured in the light and heavy type by Studebaker, of South Bend, Ind.

The Light Two-Wheel Trailer

This model has 2-in. Timken axles with roller bearings and 2⅛-in. spindles. The springs have 11 plates and are 3 in. wide. The wheels are 36 in. Sarven patent. The side frame members are 3 x 6 x 51 in., and the front and rear cross members are 3 x 6x 43⅝ in. The pole is 2⅞ x 5½ in. and 14 ft. long. It is plated on both sides the entire length. It is made with five adjustments, each hole fitted with 1 5-16-in. steel bushing for a 1-in. pin. The tread is standard 56-in. and the weight approximately 1260 lb. The capacity of this model is 3 tons.

The Heavy Two-Wheel Trailer

The construction of the heavy trailer is much the same as the light weight, except for the size and the strength of the parts. The axle is a Timken 2¼-in. with roller bearings and 2⅜ in. spindles. Springs have 13 plates each 3 in. wide. The wheels are 36 in. Sarven patent. The frame is constructed of side members 3½ x 6 x 51 in., and the cross members 3½ x 6 x 43⅝ in. The pole is 3⅜ x 5½ in. and 14 ft. long, and the pole, as in the light-weight model, has 5 adjustments. The tread is standard and the weight approximately 1580 lb. The capacity of this heavy two-wheel trailer is 5 tons.

The New Studebaker Two-Wheel Trailer With the Adjustable Pole

This outfit is designed to stand up under exceptionally rough usage and is of the type used for hauling logs, pipe, telephone poles, lumber, etc.

Motor Truck Club of New Jersey Elects Officers

NEWARK, N. J., Dec. 17.—Wesley Bellis, vice-president of Van Keuren & Son, was elected president of the Motor Truck Club of New Jersey at its annual meeting, at which more than 150 members were present. J. F. Winchester, secretary of the club, was chosen vice-president, and Alfred D. Way, Jr., was advanced from executive secretary to the position of secretary. He will continue to be active in directing the activities of the State highway transport committee's projects.

The meeting, which was followed by a smoker, was one of the best held by the organization. Its activities during the past year were briefly discussed by the officers, and no less pleasing was the balance in the treasury. It was stated that the recent drive for new members had been very successful.

Lawrence C. Ward, J. T. Castle and George Woodward are the trustees for the ensuing year, and C. T. Kavanaugh, Kenneth Aplant, Frederick Petry, R. C. Best, George Gillis and L. C. Ward comprise the committee on membership. The club endorsed the proposed vehicular tunnel between New Jersey and New York.

Parts Makers Have War Adjustment Committee

NEW YORK, Dec. 16.—A War Adjustment Committee, which will take care of the interests of parts makers during the reconstruction period, and especially in matters pertaining to the cancellation of contracts, has been appointed by the Motor and Accessory Manufacturers' Association. The services of R. M. McConnell, Cashier of the National Bank of Commerce and formerly connected with the Firestone Tire & Rubber Co., have been secured by the association, and he has established temporary headquarters at the New Washington Hotel.

The following members of the association have been appointed by President Stiger to serve on the War Adjustment Committee: Charles E. Thompson, president, Steel Products Co., Cleveland, chairman; Christian Girl, president, Standard Parts Co., Cleveland; Alexander W. Copland, president, Detroit Gear and Machine Co., Detroit.

Buffalo Concern Making Combination Tractor-Truck

A new corporation recently was formed in Buffalo, N. Y., with a capital of $150,000, to manufacture a unique tractor-truck combination, designed by E. H. Oversmith. The machine is a truck with special features which the designer believes will make it entirely suited to drawbar work on the farm. Also there is a shaft upon which any size pulley can be mounted for belt work.

The use of two transmissions, a Rockford directly back of the clutch, and a Brown-Lipe about 8 in. farther to the rear, gives the necessary gear reductions for road and field work. There is a friction roller on the shaft between the two transmission cases and this roller, when brought into contact with the face of a larger wheel mounted on a special shaft to the left, is the medium through which belt power is obtained. The pulley is mounted on the end of the shaft, which extends under the frame to the rear of the truck.

Most of the truck is standard units. A Dyneto starting and lighting system is installed. The front wheels are pneumatic-tire equipped and the rear ones, Goodrich solid-tired. When used in the field, special band wheels are placed over the rubber tires—plain-faced on the front pneumatics and heavy, grouter-equipped tractor wheels on the rear, solid tires. It is said to require but 30 minutes to make the attachment.

The new "Tractor-Truck," as it is called, has been thoroughly tested, according to the company, and is said to have performed with complete satisfaction under varying conditions.

The company recently formed to manufacture the new machine consists of Geo. A. Faber, president; Geo. B. Burd, vice-president; Alexander Sutherland, secretary, and Andrew Koehler, treasurer. These men, together with E. H. Oversmith, the designer, make up the board of directors.

The factory is at St. Johnsville, N. Y., and it is planned to have quantity production in a very short time. All the general sales and showrooms are in a newly acquired building at 2359 Main St., Buffalo, N. Y. This building is about one block from the Ford plant in Buffalo and was formerly occupied by the Stanley Steam Auto Co. Ralph E. Oversmith, advertising manager, is in charge of the Buffalo offices.

The general sales manager is C. J. Powers, a man of considerable experience in the truck industry, being formerly connected with the Buick, then the Denby Buffalo Sales Corp., and, just before taking his new position, with the Pierce-Arrow Co.

Good Roads and Trucks Will Make Freight Congestion Impossible

What the Government Will do in 1919 to Promote United States Export Trade in Tractors

By WALDON FAWCETT

WHAT Uncle Sam is going to do about promoting the export trade in American-made tractors is of vital consequence to all the factors in the industry—only less important in degree to the retail distributors than to the manufacturers. It is beside the question to dismiss the subject with the observation that the Yankee tractor industry is doing very nicely of its own accord, in driving a wedge into the overseas market. It is unquestionably doing so. The American tractor industry is assured a fairly large place in the export sun if left entirely to its own energy and initiative. It will be much more certain, though, to attain the place to which it is rightfully entitled if the Government extends a helping hand.

It is not, for the time being, a case of fearing foreign competition. Whatever they may be able to do in years to come, there is not a nation on the globe that is to-day in a position to hold a candle to the United States in farm tractor production. That proud position of preeminence is, however, one of the best reasons for pushing the trade advantage, now that we have it. Obviously, it is much easier to hold the lead than to regain it, if once lost. There is no reason to repeat, in the case of tractors, the experience of the American automobile industry, which fully completed the conquest of the domestic market ere attention was turned to the overseas outlets. The old world is hungry for tractors, and obviously it behooves the American industry to establish the fact that the United States is not only the logical source of supply, but that it is a source equal to all demands that may be made upon it.

In addition, however, to the manifest wisdom of seizing an opportunity, such as is seldom vouchsafed to any industry to gain a ready-made export trade, there is another consideration that offers strong incentive for the cultivation to the limit of the export market. Under spur of war necessity, American productive capacity for tractors has expanded at a gait that might not have been risked under normal peace-time conditions. Now, with the sudden shift from war to peace, not a few factory organizations, outside the trade finding themselves suddenly bereft of occupation through the cancellation of war contracts, are turning longing eyes toward the tractor as a product to replace munitions as a dividend-payer. The sum and substance of the matter is that it is only reasonable to anticipate for the near future tractor productive facilities, that can be profitably employed to the limit, only in the event that worth-while supplementary outlets can be opened overseas for our tractor surplus.

This is where there comes in, if he will but realize it, the tractor agent or retail distributor who has been wont, perhaps, to assume that the entire export proposition is a manufacturer's worry exclusively. If there cannot be built and maintained a sizable export demand for American tractors, quantity production in the United States will be retarded on the one hand, and on the other hand there may be a temptation to go to undesirable lengths in competition. Anything short of maximum production, under the flying start that the industry has attained, means, of course, a postponement of gradual price reductions in tractors, and that means restricted profits for every interest in the industry.

Automobile Offers Parallel

The tractor man—producer or marketer—may, according to shrewd observers in the trade, find a parallel for his own case in the past performances of the automobile man. The big, profitable market for automobiles was uncovered only with the advent of the low-price and the medium-price cars. So it will be with the tractor, according to these business doctors. Thousands and thousands of farmers, truck gardeners, etc., will think tractor and talk tractor only with the advent of moderate priced tractors,—not a lone low-priced tractor sandwiched in here and there in the more expensive line, but offered in such variety as to permit of selection. Minimum price tractors wait upon maximum quantity production, and progress to quantity production is geared to the expansion of the overseas trade.

What is the Government doing about it, granted that Federal aid is desirable? The answer to this, primarily, is that in some measure the amount of first aid to be extended will be dependent on how much of a fuss the tractor industry makes. Up to date, as it happens, the tractor industry has not made its voice heard in Washington in specific and insistent demand for assistance to find markets and to fill them when found. Perhaps it is a trifle early, so suddenly has peace come, to expect this call upon Washington for co-operation. At the same time, it may be noted that the piano manufacturers of America—who, like tractor builders, make a product adapted for export—have not been bashful in making known their wants. They have reason to believe that there is a promising market awaiting in Central and South America, and they would like to have a commercial agent dispatched at once to make an investigation.

In a way there is special justification for a hint from tractor quarters that first-hand, post-war reports from foreign fields would be especially welcome to the captains of the industry who are endeavoring to chart the business future. President Wilson, in his address to Congress, on the eve of his departure for Europe, bespoke "priorities" and special facilities for the export of the classes of machinery and equipment that are so sorely needed in northern France, Belgium and other devastated portions of Europe. That meant, presumably, tractors no less than machine tools for the looted factories. Assuredly the time is opportune for a survey of the tractor needs of the old world.

It is by no means the intention, however, to convey the impression that Uncle Sam is awaiting a "call" from the tractor industry before beginning his missionary work. As a matter of fact, a probe of the export openings for American tractors will form a definite part of the 1919 program of the U. S. Bureau of Foreign and Domestic Commerce. To be sure, Uncle Sam's business annex has not on its staff—more's the pity—any tractor expert who can approximate for the tractor trade the special research and reportorial work that the late Tom O. Jones did in China and Japan for the motor vehicle industry, and that Juan Homs did for the agricultural implement trade in South Africa and Australia. All the same, most of the needful facts as to the after-the-war demand for American-made tractors will be rounded up, incident to general investigations.

European Market Opens

From the standpoint of securing inside facts regarding tractor opportunities abroad, the industry is really in luck in more senses than one, thanks to the abrupt ending of the war. If the conflict had continued, the program of the U. S. Bureau of Commerce would have called for a concentration in 1919 of Uncle Sam's trade-building machinery upon the Latin American and Oriental fields. Neither of these fields, as our readers know, offer at this stage the best opportunities for tractor sales. With the collapse of the German military machine, however, the European market suddenly takes the center of the stage, not merely by reason of the opportunities offered for American goods, but likewise with reference to the obligations and responsibilities imposed upon American industry.

It is in this last-mentioned consideration that we find the best insurance that the corps of trade investigators and trade promoters that Uncle Sam will send to Europe will have at all times a disposi-

tion to keep watch out of the corner of the eye for tractor opportunities. The bald fact is that unless the old world can be converted in a jiffy to use of American tractors and power farming equipment in general, the United States will have to prolong its responsibility for feeding the peoples of the Continent, a responsibility that may become irksome if it involves too long a period of self-denial in the consumption of foodstuffs. That the officials at Washington are already alive to the necessity of taking a census of tractor needs and opportunities in Europe is attested by the sending of instructions to commercial attaches and consular officers in European cities to report promptly upon developments in the field of agricultural equipment. It was in response to such blanket instructions that there was recently received a report which has been found very informative on the subject of France's post-war tractor needs.

Funds for Trade Promotion

That the general trade promotion plans of the Department of Commerce for 1919 are ambitious enough to warrant hope of tangible assistance for the tractor industry may be surmised from the fact that last year $550,000 in round numbers was expended in this work, whereas for the coming year the Secretary of Commerce has asked Congress for an expense account of approximately $1,450,000. For promoting commerce in Europe, in the Near East and in those portions of Asia—say, Russia in Asia—which seem to hold the most of promise as outlets for American tractors, there will be available under the new program, if Congress approves, a fund of $435,000, being an increase of $310,000 over the present appropriation.

There is a certain satisfaction for the tractor trade in the proposal to expend this next year the sum of $137,000 in boosting American trade in general in the Far East. This would be an increase of $87,000 over the initial allotment for this work, the commercial missionary work in the Orient having been undertaken in earnest only this past year. For all that, there appears to be no future for American tractors in China and Japan,—not enough to justify the postage that would be paid on American tractor catalogs. The term "Far East," as it is used at the Department of Commerce, embraces Hawaii, and Hawaii, be it known, can by no means be denounced as barren soil for tractor exploitation.

Tractors in New Fields

Within the past year or two, American-made tractors have been put to work on pineapple plantations and sugar plantations in Hawaii, and whereas there are difficulties to be overcome, the reports to the Commerce Bureau indicate that this may yet prove a profitable field for tractors,—thereby setting an example, by the by, for sugar planters in Cuba, Java, etc. The success that has attended the scheme devised in Hawaii for employing two large tractors, attaching a plow to a cable connecting the tractors as a means of plowing to a depth of 18 to 22 inches, which sugar cultivation requires, has not been the least of the factors that have contributed to the triumph of the American tractor in this environment. Tractoring on the pineapple plantations is a more simple proposition, deep plowing not being so essential, though the hilly nature of the pineapple plantations make it necessary that tractors be well motored.

For all that the new turn of international affairs will necessitate a diversion of Uncle Sam's best effort in trade promotion from this hemisphere to the erstwhile war zone, it must not be taken for granted that Latin America will be neglected. It is the plan to spend $125,000 in South and Central America, an increase of $25,000 over this past year's outlay, and if tractor men will indicate that they would like to know how much of a market there might be for their machines in Argentina and other agricultural countries of the lower continent, there is no reason why the information should not be rounded up.

Other Things to Consider

One of the officials of the Bureau of Commerce tells me—and I am sure that the trade will welcome this sentiment—that he feels that every U. S. Governmental investigation of overseas markets for American tractors should take into account, not merely the obvious and superficial circumstances and conditions, but likewise the indirect influences that may have bearing in the premises. For example, the Bureau has discovered that the temporary relapse in the popularity of American tractors which has been reported from South Africa has been due not to any deficiencies in the tractors themselves, but rather to the high price of fuel.

Just here, too, we find work cut out, in behalf of the tractor industry, for a specialist which the Bureau of Commerce plans to add to its staff during the coming year. The new advisor, whose services are to be at the disposal of business interests, will be a specialist in foreign advertising, and his function will be to advise as to the class of copy to be employed in overseas trade, as well as give information on mediums, rates, etc. That assistance of this kind may not come amiss may be suspected from the fact that a crop of disappointed tractor purchasers has been harvested in South Africa, in part because American sales interests employed advertising matter based on conditions in the United States. They did not realize that a tractor, that will readily handle eight plows in our Middle West, cannot be expected to negotiate more than four or five plows in the soil conditions found in South Africa. A foreign advertising expert, if one can be found who really knows his business, will be able to, at Uncle Sam's expense, warn tractor men against such slip-ups.

Industry to be Informed

Important as are the plan of the Bureau of Foreign and Domestic Commerce for searching out, this next year, the opportunities for American tractors in alien environment, they will be balanced by the activities designed to get the information that may be collected promptly into the hands of tractor makers and marketers. That, when you come down to it, is half the battle. Facts and figures are of little value if they remain tucked away in the archives at Washington. Hence it is encouraging to hear that along with the requisition for a larger force of commercial economists, this branch of the Government has asked Congress for two foreign trade counsellors who will travel throughout the country for the specific purpose of carrying the data that the Government collects abroad, direct to the factories and industrial centers.

Does a tractor man want to know the why and wherefore of the reported weakness of customers in Australia, for machines with tracks and possessing other distinctive features? The foreign trade counsellor should be able to tell him of the sandy character of the soil in Australia and of the practice which renders it necessary for tractors in field service to travel over a heavy growth of straw, giving an advantage to the machine, the wheels of which are fitted with suitable lugs. Is an American producer mystified by the insistence of some prospects in New Zealand for kerosene tractors? The walking encyclopedia from the Commerce Bureau ought to be able to tell him something of fuel costs that cut more of a figure in the Antipodes than they do here.

Free Advice From Washington

An expert in foreign exchange, that it is proposed to set up in business in Washington, will give free advice as to the best methods of payment in connection with foreign transactions, and a foreign tariff expert will reinforce the bureau's present organization in translating for the benefit of American exporters the radical changes in tariff policies all over the world that may be expected as a sequel of the war. Precise information on the proper procedure with respect to tariffs and exchange is, of course, of particular importance where the average sales unit represents, as in the case of a tractor, a considerable monetary consideration.

Finally, the Commerce Bureau plans to launch an employment bureau of its own, that will endeavor to find competent help for business interests that require properly trained representatives for foreign service. To be sure, we are told that the crying need in the tractor export field is for qualified salesmen—demonstrators who can put a sample machine through its paces under service conditions, and it remains to be seen whether any instrumentality but a tractor firm can recruit such specialists However, the spirit of co-operation is there, and that is something on the eve of an era of high-tension international competition.

Truck Men Manifest Greatest Enthusiasm at Drawing for Show Spaces

By C. P. SHATTUCK

NEW YORK, Jan. 4.—When the drawings for floor space for the commercial car show were completed at the Automobile Club of America, there remained to be allotted four spaces for which the management stated there are thirty applicants. There were fully as many dealers present as at the drawing for passenger car space, and the factory branches were well represented.

Seniority determined the allotment of spaces, the oldest member of the N. Y. Dealers' Association, which is managing the shows, having first choice. This fell to the Autocar representatitve. Diagrams showing the floor space at the Madison Square Garden and 69th Regiment Armory were displayed on the board and the maximum space awarded was 1500 sq. ft.

As the senior members of the association are passenger car dealers representing manufacturers who have brought out what may generally be termed a delivery type of commercial car, or who have taken on trucks during the war, the choice positions in the Garden fell to these dealers. Among the older and well known trucks to be shown in the Garden will be the Autocar, Federal, Packard, Velie and Riker.

As was expected, it was necessary to utilize the Armory, and long before the spaces in the Garden were subscribed for it was apparent that the Armory would house a greater proportion of well known makes of trucks than the Garden. This naturally led to a slight rearrangement or exchange on the part of those wishing to display among the greater capacity trucks in the Armory. The following makes were represented in the drawings for space in the Garden:

Atlas
Autocar
Chevrolet
Columbia
Day-Elder
Denby
Dodge
Federal
Fulton
Giant
Grant
Hall
Master
Maxwell
Oneida
Overland
Packard
Reo
Riker
United States
Velie
West Electric
Hay-Dee Extended Fords
La Peer Trailers

Armory:

Bethlehem
Diamond T
Garford
Hurlburt
Kelly-Springfield
Mack
Menominee
Nash
Paige
Rainier
Republic
Selden
Schacht
Signal
Sterling
Stewart
Titan
Wilcox
*C. W. Moody
Warner Trailers
Graham Extension

*Name of concern.

It is too early to forecast the number of makes to be exhibited, but it is believed that the list of names will be augmented by many others, the representatives of which were unable to be present at the drawings. It was stated today that tractors will be shown, and also truck equipment, the Motor and Accessory Manufacturers' Association having given its members permission to exhibit.

If enthusiasm is any indication, the commercial car show at New York is already assured success. It should prove more than an exposition of trucks, special bodies, equipment, etc., for plans are being consummated to hold a series of dealer and manufacturer meetings, dinners, etc., to which dealers from a considerable area will be invited. Some of the exhibitors are eastern distributors, while others have territory including several states. Special invitations are to be sent these out-of-town dealers, who, with the factory representatives, will give the show a decidedly national tone. Already the hotels report a big advance demand and out-of-town dealers will do well to make their reservations early.

S. A. E. Will Meet During New York Show

NEW YORK CITY, Dec. 30.—As a matter of convenience to the S. A. E. members who desire to attend also the New York Automobile Show to be held during the first two weeks of February at Madison Square Garden, the meeting of the society will be held February 4-6, instead of January 12-14, the date first decided upon.

This Carry Through meeting of the S. A. E. to be held in February will be the occasion of illuminating technical sessions on the different automotives, and on fuel for internal combustion engines. A whole half-day session will be devoted to consideration of gasoline, kerosene, benzol and other fuels. Representatives of the Government will present their latest data as to supplies and the results of recent intensive research of a startling nature. Men of acknowledged authority will discuss this matter from the standpoint of engine design. Many other timely subjects will be discussed. Members returned from the front will relate their experiences, and particulars never before made public concerning war automotive apparatus will be given in papers by members and others in Government service.

The Standards Committee has succeeded in getting back to normal in its activities in formulating recommendations for practice in routing engineering matters connected with the production of automobiles, trucks, tractors, airplanes and motor boats. During the war the S. A. E. contributed the service of its standards department to a large extent to the Government, establishing and assisting in creating many valuable standards.

The Standards Committee will hold its meeting on February 4 in the Engineering Societies Building. Reports will be received from many divisions of the committee, which consists of nearly 200 engineers, on such subjects as roller bearing sizes; cable terminals for ignition distributors, generators, meters and switches; mounting dimensions of generators on engines; rating of storage batteries; dimensions of engine support arms; flexible disk couplings for magnetos; swing and fixed portlights for marine craft; carburetor hot-air intake sizes; machine screw nuts; international spark-plug dimensions; ball and socket joints; various features of leaf springs and their installation; voltage and capacity ratings of farm lighting outfits; flanges for cast-iron carburetors; pipe flanges; testing forms for semi-portable engines, and sizes and other features of solid and pneumatic tires. One novel consideration at this time is the use of solid rubber tires for farm tractors.

The Standards Department of the S. A. E. has had a special committee at work on the subject of locking devices for cars to prevent theft. This is a mixed subject of law, municipal administration and engineering. It is the policy of the S. A. E., however, to restrict its activity to the engineering phase of such subjects.

On February 5 and 6 technical sessions will be held in the morning and afternoon. Automotive subjects of vital industrial and economic import will be presented and discussed by authorities: aeronautic engines, farm tractors, airplanes, base repair shops, effect of aeronautic practice on automobile design, fuel, navy aircraft (including dirigibles), motor truck performance, high-efficiency engines, post-war types of passenger car and motor boats.

The S. A. E. Victory Dinner will be held at the Hotel Astor on the evening of February 6.

Holland May Import Again

WASHINGTON, Dec. 26.—Holland is now permitted to import goods from the United States and the Associated Powers under an agreement announced by the War Trade Board, whereby licenses will be granted covering such imports when made in Dutch ships and consigned to the Netherlands Overseas Trust. Automobiles and parts, not including tires, are among the articles that may be imported. American exporters to Holland must obtain advice from prospective importers that an import certificate has been issued by the Netherlands Overseas Trust to cover the proposed consignment.

Personal Items

Lee Brownell Ault, secretary of the Ault & Wiborg Co., Cincinnati, Ohio, makers of varnishes and enamels, died recently.

H. J. Ayers will cover the New York and New England states as district manager for the Rainier Motor Corp., New York City.

John Baker, Jr., has been appointed general sales manager of the Kelly-Springfield Motor Truck Co., Springfield, Ohio.

E. B. Baltzly, who has been identified with the Warner Gear Co., Muncie, Ind., for a number of years, has been promoted to the post of assistant general manager of the company, with headquarters at Muncie.

J. C. Benedict, formerly connected with the Clyde Cars Co., has joined the Acme Motor Truck Co., Cadillac, Mich., as district sales manager for the states of Delaware, Maryland, Virginia and North Carolina.

Harry A. Biggs is now general sales manager of the automobile division of the Studebaker Co., South Bend, Ind.

Wm. P. Barnhart has been appointed general sales manager of the United States Motor Truck Co., Covington, Ky.

J. F. Bowman is now sales manager of the Garford Motor Truck Co., Lima, Ohio.

Harry F. Bradner has resigned as president and general manager of the Auto Body Co., Lansing, Mich.

T. L. Briggs has been appointed district manager, covering the Middle West territory, for the Rainier Motor Corp., New York City.

Leo N. Burnett has been released from active service in the Navy and has returned to the Cadillac Motor Car Co., Detroit, to resume charge of the advertising department. **John A. Cleary,** who filled Mr. Burnett's place "for the duration of the war" has again taken up his duties as sales promotion manager for the Philadelphia company.

Fred Cardway, manager of the export department of the Packard Motor Car Co., has been transferred to New York City, where he will open an export office. The company now has dealers in 19 foreign countries, and in Hawaii, the Philippines and Porto Rico.

William Cairns, general manager of the Detroit Pressed Steel Co., Detroit, has retired from active connection with that concern.

H. W. Clarke, formerly connected with the advertising service department of the McGraw Hill Co., and prior to that with the Westinghouse Electric & Mfg. Co., is now manager of advertising for the Chicago Pneumatic Tool Co., Chicago, Ill.

Russell Cooke has been appointed general sales manager of the Racine Rubber Co., Racine, Wis.

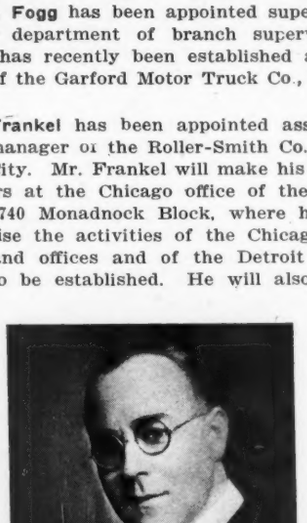
A. H. Doolittle, formerly sales manager of the Zenith Carburetor Co., has joined the Sunderman Corp., of Newburgh, N. Y., in the capacity of general manager.

C. J. Elston has been made district manager for the Denby Motor Truck Co., with headquarters at Atlanta, Ga.

T. L. Fauntleroy has been made sales engineer of the Lakewood Engineering Co., with headquarters at 1034 Widener Bldg., Philadelphia, Pa. He was formerly connected with the Gurney Ball Bearing Co.

T. B. Fogg has been appointed supervisor of the department of branch supervision, which has recently been established at the plant of the Garford Motor Truck Co., Lima, Ohio.

M. Frankel has been appointed assistant sales manager of the Roller-Smith Co., New York City. Mr. Frankel will make his headquarters at the Chicago office of the company, 740 Monadnock Block, where he will supervise the activities of the Chicago and Cleveland offices and of the Detroit office soon to be established. He will also have charge of the automobile instrument business in the territory served by these three offices.



P. J. F. Batenburg

For the past eight years chief engineer and designer for the Four-Wheel Drive Auto Company, Clintonville, Wis., has resigned his position with that company. Mr. Batenburg has not as yet made any other connections.

John B. Genn, chief engineer of the Stewart-Warner Speedometer Corp., Chicago, died Dec. 15.

George A. Gibson, formerly associated with the Diamond T Motor Car Co., has been appointed general manager of the O. Armleder Co., Cincinnati, Ohio.

H. M. Gillespie is no longer connected with the Western Trailer Co., Kansas City, Mo.

C. C. Hanch, chief of the Automotive Products Section of the War Industries Board, will return to his post as treasurer of the Studebaker Corp., South Bend, Ind., upon the completion of his duties in Washington.

Henry L. Hornberger has been appointed general sales manager of the Globe Rubber Tire Mfg. Co., Trenton, N. J. Mr. Hornberger will make his headquarters at the executive offices of the company in New York.

Lieut. J. B. Howell has been mustered out of the Artillery Service and will rejoin the Bound Brook Oil-less Bearing Co., Bound Brook, N. J.

Willard A. Johnson, formerly connected with the sales organization of the National Acme Co., has been appointed director of sales for A. H. & F. H. Lippincott, Inc., Philadelphia, manufacturers of screw machine products and metal specialties.

Chas. F. Lyngaas, export factor for accessories, parts and tools, 46 W. Broadway, New York City, announces that he will leave in January for a trip to England, South Africa and the Argentine.

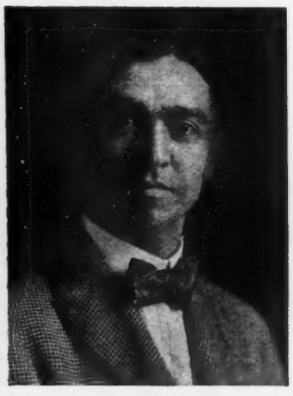
R. M. McConnell, formerly with the Detroit branch of the Firestone Tire & Rubber Co., is now in Washington. He represents the Motor and Accessory Manufacturers' Association at the Capital.

Cyrus H. McCormick has retired from the presidency of the International Harvester Co., Chicago, Ill., which he has held since the organization of the company in 1902. He is succeeded by his brother, Harold F. McCormick, who held the office of vice-president of the company.

J. L. McIntosh has been appointed general manager of the Field Motor Co., Grand Rapids, Mich.

Henry Mossbach, 1421 Tenth Ave., Seattle, Wash., will distribute Rainier trucks in Washington, Oregon, Montana and part of Idaho.

Clarence A. Nelson, vice-president of the Nelson Motor Truck Co., Saginaw, Mich., died recently of acute indigestion.



G. W. Werden

Export manager of the Denby Motor Truck Company, Detroit, Mich., who is now established in the New York office of the company.

Glen B. Hiller

Newly appointed general sales manager and director of advertising, of the Nelson Motor Truck Company, Saginaw, Mich.

Gard Gale

Who has been made general sales manager of the Commerce Motor Truck Company, of Detroit.

Homer Hilton

Now sales manager of the Oskosh Motor Truck Manufacturing Company, Oshkosh, Wis.

Paul L. Odle, formerly connected with the Republic Motor Truck Co., has joined the Parrett Tractor Co., Chicago, and will handle work of a special nature in connection with the purchasing end of the business.

F. J. Pardee, for the past three years general manager of the Diamond T Motor Car Co., Chicago, Ill., has been appointed western sales manager of the company, and will establish headquarters at San Francisco. His territory will include British Columbia, Alaska and the Hawaiian Islands.

D. E. Perry has severed his connection with the Doble Detroit Steam Motors Co., and is now purchasing agent of the Hayes Mfg. Co., Detroit, Mich.

Prescott C. Ritchie, western representative of the Westinghouse Automobile Equipment Department, announces the removal of his headquarters from Indianapolis to the Conway Bldg., Chicago.

Charles B. Seger was recently elected president of the United States Rubber Co., New York City, upon the resignation of **Colonel Samuel P. Colt.** Colonel Colt was made chairman of the board of directors.

Herbert C. Severance, secretary and sales manager of the Racine Rubber Co., Racine, Wis., died recently at his home in Cambridge, Mass.

George Simons has been appointed Detroit district sales manager by the Edison Storage Battery Co., of Orange, N. J.

W. P. Sparks is now associated with the Cleveland Milling Machine Co., Cleveland, Ohio, as representative at the Indianapolis office of the company, at 316 Terminal Bldg.

A. C. Stebbins, president of the Lansing Co., has been appointed general manager of the Auto Body Co., of Lansing, Mich., succeeding H. E. Bradner, who retired from active management of the company owing to ill health.

Frank A. Storer has resigned as general manager of the Wire Wheel Corp. of America and has left for Buenos Aires, where he will re-engage in the business of importing American products.

Samuel S. Toback, formerly president of the Redden Motor Truck Co., of Chicago, has accepted a position as general manager of the Marmon Automobile Co. of New York, metropolitan distributor of Marmon and Hupmobile cars.

W. L. Towne has joined the advertising forces of the General Electric Co., Schenectady, N. Y.

L. E. Townsley, manager of the foreign trade department of Paul R. Ruben & Co., 16 California St., San Francisco, Cal., leaves the last of January for China, Japan, Philippines, Dutch East Indies, Straits Settlements and Australasia, to establish resident agents at principal ports. Correspondence is invited with American manufacturers desiring to increase their foreign trade.

T. J. Turk, formerly connected with the Kissel Motor Car Co. and the General Motors Truck Co., has resigned as assistant general manager of the Inter-State Motor Co., Muncie, Ind.

Lieutenant-Colonel Jesse G. Vincent has returned to the Packard Motor Car Co., Detroit, to take charge of engineering. He has been honorably discharged from the Army.

Fred D. Williams, former head of the power specialty department of the H. W. Johns-Manville Co., New York, has been appointed general manager of the L. H. Gilmer Co., Philadelphia, Pa.

S. M. Williams, president of the Highway Industries Association, and for the past four years sales manager of the Garford Motor Truck Co., Lima, Ohio, has been made head of the department of highway development, recently created by the Garford company.

A. J. Whipple, who has been acting as special representative of the Diamond T Motor Car Co., Chicago, Ill., has been appointed general sales manager of the company.

Fred J. Vandemark has been appointed special representative in the eastern part of the United States by the Acme Motor Truck Co., Cadillac, Mich.

D. E. Whipple, of Chicago, Ill., general district representative of the Anderson Electric Car Co., died recently from pneumonia.

A. H. Zimmerman has resigned as treasurer and director of the Continental Motors Corp., Detroit, Mich. He is succeeded by **G. W. Yeoman,** who will continue to act as director of sales and advertising.

Factory News

Borg & Beck Co., Moline, Ill., manufacturer of clutches, has opened a new plant in Chicago. When this plant is in full operation the daily output of the company will be 3000 clutches per day.

Rubber Hub Co., Rock Island, Ill., has been organized with a capital stock of $150,000, to manufacture a rubber hub invented by Lycurgus Gudgell, of that city.

Warner Gear Co., Muncie, Ind., has installed machinery in its new building and is ready to start production on after-the-war orders. The building is one story and has a floor space of 350 sq. ft.

Studebaker Corp., South Bend, Ind., is planning to create an issue of $15,000,000 of seven per cent. serial notes, with first maturity two years hence. The Studebaker company plans a car output of from 150,000 to 160,000 annually.

Putman Chain Co. has been formed at Worcester, Mass., by Albert E. Newton and Harry V. Prentice, who have taken over the U. S. Motor Truck Chain Co.

Liberty Starter Co., Detroit, Mich., announces the completion of its new building, in which increased facilities for carrying on the manufacture of its product, electric starters, are provided.

United Motors Co., Grand Rapids, Mich., is building a private testing track to eliminate the necessity of using the city streets for that purpose. The company expects to begin the manufacture of United trucks for commercial use about Feb. 1.

Owosso Bronze Bearings Co. will soon be in production at Owosso, Mich. This company will make bronze die castings and bearings for trucks and tractors.

Victor Truck Co., St. Joseph, Mich., formerly the Simpson Truck Co., announces that the capital stock of the company has been increased from $50,000 to $150,000.

Timken Roller Bearing Co., Canton, Ohio, has under construction new buildings which will practically double the size of its present plant.

Cincinnati Storage Battery Co., Cincinnati, Ohio, announces the completion of its new factory at Moorman Ave., near Madison Road. The plant is one-story, 65 by 265 ft., and has four times the capacity of the former plant. The company is now manufacturing everything for its batteries with the exception of the rubber parts.

Ideal Tire & Rubber Co., Cleveland, Ohio, recently organized for the manufacture of tires and tubes for both passenger and commercial cars, has opened its new plant on Warner Rd., S. E.

Central Rubber Co., Inc., Defiance, Ohio, has completed its plant and is now manufacturing solid tires. It is a branch of the Central Rubber Co., of Akron.

Truscon Steel Co., Youngstown, Ohio, formerly known as the Trussed Concrete Steel Co., announces that it is now manufacturing pressed steel parts of all kinds. This company was engaged in the manufacture of shells for the Government during the war.

Baeder, Adamson & Co., Philadelphia, Pa., announce that the company has recently established a department for the manufacture and sale of gas engine packing and cut gaskets. H. Stanley Bristol has been placed in charge of this department. Mr. Bristol has for a number of years been engaged in the manufacture of Vellumoid, and will manufacture a similar product for Baeder, Adamson & Co., under the trade name of Tan Fibre.

United States Rubber Co., Providence, R. I., expects to complete its new plant by the end of January. A force of 5000 men will be employed at this large factory and the output will average $20,000,000 of solid and large pneumatic tires annually. Tire sales for the year 1918 are in the neighborhood of $70,000,000 to $75,000,000, as compared with less than $55,000,000 in 1917.

Wisconsin Motor Mfg. Co., Milwaukee, Wis., announces an increase of capital from $1,000,000 to $2,000,000 to provide for future extensions of facilities and trade.

Removals and Trade Changes

Hel-fi Co., Belvidere, Ill., has taken over all assets and business of the Motor Accessories Mfg. Co., formerly located at Marshalltown, Iowa, and will continue the manufacture and distribution of Hel-fi spark plugs. New manufacturing facilities have been provided and an aggressive sales and advertising campaign is being planned. Hel-fi plugs, the distribution of which has been confined principally to western territory, will now be offered to the trade throughout the United States, Canada and for export. C. C. Eldridge, formerly president of the Motor Accessories Mfg. Co., is president of the new company.

Joseph T. Ryerson & Son, Chicago, Ill., announces the opening of a Philadelphia office, located in the Widener Bldg.

Fansteel Products Co., Inc., North Chicago, Ill., announces that its New York office is now located in the Park Row Bldg., 15 Park Row, New York City.

Holley Carburetor Co., Detroit, has purchased a tract of land in Detroit for the erection of a plant for the manufacture of the Holley vaporizer for Ford cars.

Shuler Axle Mfg. Co., formerly located at Detroit, Mich., has removed its entire business and equipment to a new plant at Louisville, Ky.

Inland Piston Ring Co., St. Louis, Mo., has removed its offices from the factory to the Advertising Bldg., 1635 Louis St.

Lippard-Stewart Motor Car Co., Buffalo, N. Y., is removing its stock and equipment from Buffalo to its new plant at Syracuse, N. Y.

Knickerbocker Motors Co. has removed its sales office from 170 Broadway, New York City, to Poughkeepsie, where the Knickerbocker Form-A-Tractor is manufactured.

O'Bannon Corp., New York City, announces that it has recently taken over the Taunton Oil Cloth Co., of Taunton, Mass., and is now prepared to furnish the trade with a complete line of coated fabrics, including imitation leather, rubber carriage cloth, single and double texture rubber cloths, oil cloths and enameled cloths. The Taunton plant will continue to be run by Nathan Newbury.

Victory Mfg. Co., manufacturer of spark plugs, specializing in plugs for trucks and tractors, has bought the factory buildings and equipment of the Upson-Martin Co., at Thompsonville, Conn., and has also purchased the assets and patents of the Gibson-Hollister Co, of Springfield, Mass. The company will also manufacture rim tools and electrical specialties.

D. M. Hamilton and W. C. Renshaw have taken over the United States Novelty Mfg. Co., Detroit, Mich., and have changed the name of the company to the Acme Brass Works, as more representative of their product. The capital of the company has been increased to $50,000. The company will continue the manufacture of packless valves for underground tanks and pumping stations, and will also produce a line of drain cocks, gasoline, priming and gas stove cocks. D. M. Hamilton, formerly associated with the Detroit Brass Works, has been elected secretary and treasurer of the company.

W. C. Renshaw, formerly factory manager for McRae & Roberts Co., has been elected vice-president.

New Agencies

Reid Motor Co., Hartford, Conn., has recently taken the agency for United States truck in that vicinity.

Beatty Auto Co., Quincy, Ill., has secured the agency for Selden trucks and will distribute them in Adams and adjoining counties in Illinois and Mississippi.

Eugene F. Lalley & Sons Co., Boston, Mass., has been appointed distributor in the New England States for the Triangle Motor Truck Co., St. Johns, Mich.

Chambers-Weaver Motor Co. has been formed in Buffalo to handle the sale and service of Mack trucks. The company is located at the Iroquois Garage building, where Geo. B. Weaver formerly handled the Mack line under the name of the Iroquois Garage Co.

A. J. Whissel Co., Inc., 147 Broadway, Buffalo, N. Y., have taken on the Rainier lines of trucks for northwestern New York.

S. L. Van Nierop & Co., 80 Wall St., New York City, with branches throughout the East Indies, have secured the exclusive sales rights in the Dutch East Indies, for Rainier trucks.

Sanford Motor Truck Co., Syracuse, N. Y., has recently added the following dealers to its list: Arman R. Vanasse, Anthony, R. I.; Frank Crook, Pawtucket, R. I.; Roscoe Benjamin, Winsted, Conn.; C. W. Perkins, New Milford, Conn.; Herr Bros., Quarryville, Pa.; Jones Auto Co., Willimantic, Conn.; A. J. Schnell, care of Schnell's Garage, Scranton, Pa.; American Motor Sales Co., Erie, Pa.

Chilton & Snyder, Charleston, W. Va., have been appointed distributors of Rainier trucks in the state of West Virginia.

Employees Participate in Company's Profits

BUCHANAN, MICH., Jan. 6.—The annual meeting of the employees of the Clark Equipment Co., manufacturers of cast steel disk wheels and internal gear drive axles for motor trucks, twist drills, precision tools and electric steel castings, was held just before the Christmas holidays in the company's theatre at the Buchanan, Mich., plant. The building was thronged with employees, a very large percentage of whom are stockholders in the company.

Following an address by President Eugene B. Clark, in which he told of the problems to be solved during the period of demobilization and reconstruction, an entertainment program was provided, including music by the company orchestra of 16 pieces, selections by the Polarine Quartette from South Bend, Ind., boxing bouts by local talent and concluding—as becomes a prohibition community—with cider and cigars.

Rock Island Arsenal to be Repair Depot

ROCK ISLAND, ILL., Jan. 4.—The harness shop at the Rock Island arsenal which during the past year gave employment to 1990 men, will be used as a repair plant for government trucks and tractors. Special machinery for motor vehicle repair work will be purchased and installed in place of the obsolete harness making machines now in the arsenal.

To Remove Heavy Truck Wheels

To a great many repairmen the removing of a dual tired rear truck wheel is considered a two or three man job. But it can be done by one man with very little effort. On nearly all large trucks the body overhangs the rear wheels to such an extent that a tackle cannot be used to lift them on or off. Take a piece of tin about 12 in. wide by 18 or 20 in. long, smear one side with a light coat of grease, and after having jacked the wheel off the floor, slide the tin under it, greased side up. Put the tin under just far enough so that the inside tire will rest on the greased surface. Remove hub cap, outside bearing, etc., then let the jack down until the tire just rests on the tin and the axle is simply held up by the jack and not by the wheel. If the axle is lowered enough so that it hangs free, the wheel will pull off easily by simply sliding it on the greased tin. The removing of the heaviest truck wheel is only a one man job and an easy one at that as there is no weight to be lifted and when off it stands in a position to be rolled anywhere in the garage. I have used this idea for several years and it is the easiest and simplest method I have ever used or seen. The wheel is as easily replaced as it is taken off, simply push it home onto the axle, slide on the bearing and nut, then raise it up and adjust it.—C. E. Hobart, Bridgeport, Conn.

Western Truck Specifications in the February CCJ

Splitdorf Holds Victory Celebration

A group of executives, selling and distribution officials of the Splitdorf Electrical Company, makers of Dixie and Sumter magnetos, impulse starting couplings, plugoscillators, spark plugs, ammeters, etc., gathered recently at Newark, N. J., for their Magneto Victory Sales Convention.

New Addition to the Plant of the Shelden Axle & Spring Company, at Wilkes-Barre, Pa.

The new building is being erected over the old one-story building, only part of which was two stories high. It can be seen to the left of the photograph. The addition will be extended to the left so that when completed it will cover the building entirely. The new building is two stories high and will provide eighty thousand square feet of floor space and enable the company to increase its production forty per cent.

New "Culti-Tractor" Does Not Require Specially Made Implements

THE Culti-Tractor embodies a number of special features in design, which reflect the progressive tendency in adapting the tractor, in a general way, to farm work of various kinds and capacities with a minimum outlay for equipment. Especial attention has been given in designing this tractor to make it adaptable for handling the ordinary farm implements or wagons that are designed for use with horses, while at the same time furnishing a more dependable, more powerful and faster power unit than the horse, at a low first cost. The Culti-Tractor sells for $785.

The tractor has been reduced to the minimum point in weight where efficient traction is considered for a machine of its power, having a rated drawbar pull of 1100 lb. This item was given special attention so as to keep the full cost and the operating cost commensurate with the first cost. In restricting the weight no pulling power has been sacrificed, as the tractor, with a rated power of 7 and 12 hp. on the drawbar and pulley, respectively, and a net weight of 2300 lb., according to the company's claims, will handle one 14-in. plow for breaking or two 12-in. plows in ordinary stubble plowing, and turn over from four to six acres in a ten-hour day with a consumption of a gallon and a half to two gallons of gasoline per acre. An equal performance is claimed for it in handling harrows, disks, rake, binder, mower, planter or with a one, two, or three-row cultivator. It is also adaptable to draw the Oliver two-way reversible plow. Low weight has been secured by adopting steel in place of cast-iron wherever possible.

Particular attention has also been given to the steering and control features, a number of special arangements being provided through which the tractor is given exceptional scope in operation while retaining a simple means of governing the direction and speed. The tractor is operated from the seat of the implement which it is pulling, and is steered by power, a simple and easily-handled lever being directly connected with the clutches. Duplicate steering clutches are attached to the main drive shaft so that to guide the machine accurately in either direction it is only necessary to release or engage either clutch. It will turn in a four-foot radius, either to right or left, a feature which gives it greater operating efficiency in orchards, along fence lines or in corners, than could be obtained with horse-drawn implements. Much of this facility of operation is derived from its compact size, being 120 in. in length, 52 in. in width and 54 in. in height.

Another unique point in design is an extensible axle which permits an expansion of the tread from 36 to 48 in., so that the width of the machine may be made to conform to the rows of almost any growing crop.

The Culti-Tractor is essentially a two-wheeled type having two large wheels, 40 in. in diam. and 8 in. wide which also serve as supporting members, although the rear carriage with two wheels on a one-piece axle is furnished as a balancing member when needed. This carriage has detachable supports which can be placed in position in a short time and with little effort.

Illustrating Method of Control When Cultivator is Attached

Structurally the machine is a very rigid job, having a one-piece, cast frame and a 2-in. drop forged axle. The engine is hung by the three-point suspension method, longitudinally in the frame and at right angles to it, with the flywheel at the back end and next to the jackshaft housing. The radiator is suspended between the free front ends of the frame and the crankshaft extends out through the lower part of the shell to take the starting crank.

A light, 3¼ x 4½, 4-cylinder engine is used. It is of the vertical type, cast in block, and has an S. A. E. rating of 16.9 hp. at 1000 r.p.m. at which speed it is regulated by a Pierce governor. The inlet and exhaust valves which are arranged in L formation have a clearance diameter of 1⅜ in. and are operated by a 1-in. camshaft. There are three ring grooves

The New Culti-Tractor is Operated From the Seat of the Implement

on the pistons, each 3-16-in. wide. The crankshaft, 1⅞ in. in diameter, is carried on two main bearings with a total length of 5⅞ in.

A Simms H. T. magneto with ⅞-in. S. A. E. standard spark plugs, comprise the ignition outfit and carburetion is effected through a Kingston 1-in. gravity feed carburetor which is designed to handle either gasoline, naphtha or kerosene. The explosive mixture after passing from the carburetor is heated in the manifold by the exhaust and a Bennett air cleaner is employed to filter air fed to the carburetor.

A force feed and splash system of lubrication is used, a plunger pump circulating the oil to all working parts from a 7-gal. reservoir.

Water and air are used as cooling mediums, the former circulating by the thermo-syphon system and the latter by a Rex belt-driven fan.

No differential is used, the power being transmitted from the engine crankshaft by a pinion to two bevel gears on a jackshaft which carries duplicate clutches. These clutches connect the power with sets of spur gears in gear housings along the frame on either side of the engine, two large bull gears fixed on the axles taking the final drive. This arrangement of the gearing in housings gives them protection from dirt and dust and provides ample lubrication.

The transmission gears, which are constantly in mesh, give a reduction of 50 to 1 forward and reverse, and a speed varying from 2 to 3 m.p.h., according to the engine speed.

The belt pulley, 8 in. in diameter with a 4-in. face, is carried on an extension of the transmission jackshaft, which extends through right end of the clutch housing. The pulley speed is 600 r.p.m. The United Tractors Co., Inc., 2 Rector St., New York City, makers of the Culti-Tractor, is controlled by the principal owners of the Somerville Iron Works, Somerville, N. J., which is building the tractors under contract. The Acme Road Machinery Co., Frankfort, N. Y., has also been given contracts for making Culti-Tractors.

The Crankcase, Transmission Case and Clutch Housing Are a Unit and Form the Frame.

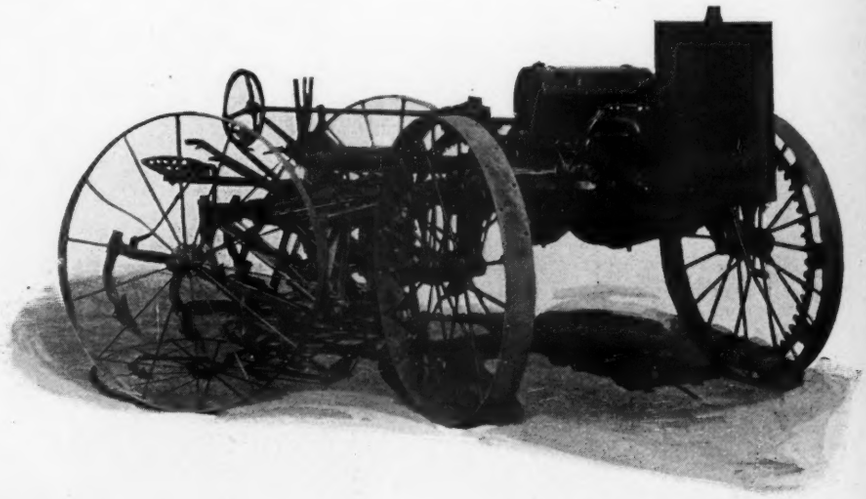
Two New Tractor Models Announced by Allis-Chalmers

A NEW tractor, known as the "General Purpose," has been announced by the Allis-Chalmers Mfg. Co., Milwaukee, Wis. The new model is rated as being 6 hp. at the drawbar and 12 hp. on the pulley. The makers state it is capable of pulling a 16-in. bottom plow, a single or double row cultivator, mower, grain binder, corn binder, etc.—in other words is adaptable to practically any of the standard makes of farm machinery.

It has a clearance of 28 in., which makes it adaptable for cultivating corn. This model is of the type which has only two wheels, which are the drivers, and are designed so as to carry the entire weight of the machine. The tractor hitches directly to the implement; the latter forms the rear sustaining member. The tractioneer rides on the implement, and the latter is really a unit with the tractor. The operator thus has control of both the tool and the tractor. When not used with farm tools the tractor is equipped with a truck, which may be attached readily. The Allis-Chalmers company says it is manufacturing the "General Purpose" tractor on a large scale and plans are under way for a material increase in the output.

The Allis-Chalmers company is also manufacturing a new type of four-wheel tractor, which has a rating of 15 hp. at the drawbar and 30 hp. on the belt. It is capable of pulling from three to four 14-in. plows and has a drawbar pull of 3000 lb. In general design it has its two rear wheels as drivers, these being 48 in. in diameter with 12 in. face, the wheelbase being 66 in. The front axle is of the built-up type, steering being accomplished through knuckles. One of the features of the machine is that the frame is made of cast iron. The component parts of the machine, such as the crankcase of the engine, the transmission case, clutch housing and rear cannon bearing being either bolted or cast together, form a unit. In other words, the engine and transmission are self-supporting.

The engine is four-cylinder vertical type, 4¾ x 6½, with a speed of 830 r.p.m. It is arranged longitudinally with the machine and uses either gasoline or kerosene as fuel, in connection with the Bennett carburetor. The belt pulley is 15 in. diameter with 7-in. face. A clutch of the company's own make is used. The transmission is of the sliding gear type, with two speeds forward, 2.3 and 2.8 m.p.h., and one speed reverse. Final drive is through inclosed bull gear and pinion. The machine in a very general way gives a neat, sturdy appearance.



Showing Cultivator Attached to New Two-Wheel Allis-Chalmers

The hoods covering the engine and other parts are so designed as to give a stream-line effect, extending on a level with the top of the radiator.

Higrade Motors Co. announces that after January 1 its headquarters will be at Harbor Springs, Mich.

February issue of THE COMMERCIAL CAR JOURNAL will contain the specifications of Western trucks.

Selling Tractors in Chicago's Busy Loop District

One would hardly expect to find a ready and flourishing market for farm tractors and all the farm machinery that goes with them in Chicago's famous "loop" district, where there are probably more high buildings, trolley cars, people and general business congestion than in any other spot of similar size in the world.

These "farmers" are busy most of the time directing tremendous business interests, such as the packing industry, or large life insurance corporations, banks, etc. When the cares of big business are laid aside, or when they want a little real life, every one of these "city agriculturalists" goes out to one of his several big farms and finds his greatest happiness in making his farming ventures successful.

That's the reason tractor and farm machinery displays are found in such expensive showrooms on Michigan avenue, Chicago's famous lake front boulevard.

These big business men, financiers, captains of industry, etc., visit these salesrooms oftener than one would believe, and the interest they show in all the latest designs of tractors, plows and farm machinery of all kinds, is the interest of the man who knows his subject thoroughly. They farm as they run their other business enterprises, efficiently and successfully. They know what sized tractor ought to be used on certain farms and under certain conditions, and they know the kind of tools that ought to be used with it.

They know crops quite as well, probably better, than the average farmer. And, having the money to do with, they invest it wisely, yet liberally, in fitting out their farms to get the very best possible results from the soil.

These "city agriculturalists" were among the first to heed the Government's call for increased food production, and they outfitted their farms right at the start so that every possible acre could be tilled and put into food production.

Even on the largest farms these men have not taken to the large size tractors, however, preferring to use several of the two- or three-bottom outfits rather than handling large gangs with the larger sized units.

Mason in Full Production on Solids

KENT, OHIO, Dec. 18.—The Mason Tire & Rubber Co. announces that its solid tire department is now in full production on solid tires, which range from 32 x 3½ to 40 x 7. The duals, adapted to nine sizes, are made up of two single tires, which the manufacturer claims insures better traction and prevents side slip, because of the space between the two singles.

Auto Trade in Far East is Dependent on Roads

The question of road construction upon which to such a great extent depends the future market for motor vehicles in this country extends likewise, but to a still greater extent, to China, according to a report of the Bureau of Foreign and Domestic Commerce of the Department of Commerce. Discussing American automobiles in the Far East, the Bureau states that while American cars now predominate in China, the future of the motor industry in that country is far from encouraging, unless steps are taken to so improve the highways as to make their use practicable. As to road conditions in China, the Bureau says:

"As a general rule there are no suitable roads to be found outside the foreign concessions of the treaty ports, although there are some 150 miles of streets in Peking suitable for motor cars and a few short stretches of road scattered throughout the Republic. The feature that should interest American motor car manufacturers, however, is the fact that there is at the present time a desire for roads, and a realization on the part of both Chinese officials and foreign residents that highways are essential to the development of the vast resources of the country. Shanghai is the center for motor cars as a result of its foreign population of approximately 20,000. Registered cars in the city number about 1200 and some two or three hundred are in storage.

"There are only 2700 cars in all of Japan, but the recent prosperity has greatly stimulated the demand and will for some time result in increased sales. Americans have had most of the business since the war started and seems to have the market for medium and low-priced cars well in hand. The abundance of money among the buying class and the desire to own cars is, however, offset by the lack of suitable roads and bridges. The only recent improvements in this respect have come about largely as the result of military requirements. There is a well-defined desire to manufacture Japanese cars, but progress in that direction has necessarily been slow.

"According to Tom O. Jones, author of the Government's report, Hawaii has purchased more cars than China and Japan combined, and the prosperity of this American possession makes it an attractive if limited field for the sale of American machines. An interesting feature is the fact that the sugar companies have found it economical to haul the workmen to and from the plantations each day in motor trucks.

"In presenting the case for export trade in general, Mr. Jones says that the American manufacturer is coming more and more to appreciate the value of such trade as a great balance wheel, a factor that will allow the factories to carry on increased production through what are usually called the dull months, namely October to March. Because of climatic conditions, the export trade in motor cars is largely a year-round proposition in the Far East and in the Tropics, and in the Southern Hemisphere it is at its height during the winter season. Anv influence that may be exerted by rainy seasons is usually such as to relieve the pressure of delivery requirements during what we know as the busy months in

The Federal Trade Commission Investigates Restrictions of Trade

Declaring it has reason to believe they are "wrongfully and unlawfully engaged in a combination or conspiracy unfairly to hamper and obstruct competitors," the Federal Trade Commission, "in the interest of the public," has issued formal complaint against the Baltimore Hub Wheel & Mfg. Co. and the Holland-Ramsey Co., Baltimore auto accessory concerns.

The complaint alleges the companies "for more than two years past" have sought to induce and compel manufacturers to refuse to recognize certain of their competitors as jobbers or wholesalers and as entitled to the benefit of jobbers' or wholesalers' prices and terms. This, the complaint alleges, has forced such competitors to buy their accessories at higher prices.

The Trade Commission also has ordered the Milwaukee Tank Co., Milwaukee, Wis., makers of automatic measuring oil pumps, tanks and devices for the storage and hauling of gasoline and other volatile liquids, to discontinue "divers means and methods of inducing and procuring a large number of its customers and prospective customers and the customers and prospective customers of its competitors to cancel and rescind orders and contracts for the purchase of pumps, tanks and outfits placed with said competitors."

The concern agreed to issuance of the Commission's order waiving right to introduce testimony in support of its practices.

Tractor Show to be Held From February 24 to March 1

KANSAS CITY, Dec. 20.—A building on the Union Station Plaza will house the fourth annual national tractor show, to be held February 24-March 1. The automobile show will be held during the same week. The tract of land on which the building is to be erected is 120 by 500 by 480 ft. The floor space occupied by the exhibit will be 50 per cent. greater than that of last year.

The show has been endorsed by the Government and by various associations of the industry, and its principal object is to give the farmer an opportunity to learn which tractor will be best adapted to his own use.

Passenger Car Sales Methods Will Not Sell Trucks

Some Advice to the Passenger Car Agent Who Goes Into the Truck Business. Modern Sales Methods That Get Results

By C. P. SHATTUCK

WHEN the curtailment in the production of passenger cars began to affect the dealer the COMMERCIAL CAR JOURNAL advocated, among other things, the selling of commercial cars. At first the suggestion did not meet with general approval but as time went on, as did the overhead of the passenger car dealer, it was demonstrated that the plan was entirely feasible and profitable. Today the motor truck occupies space in the more pretentious show rooms along the automobile rows in the various cities.

The merchandising of commercial cars by dealers formerly specializing in the distribution of passenger cars has resulted in what at one time would have been considered unconventional sales methods, and some of the plans, particularly those dealing with publicity, have proven that the live wire passenger car dealer can readily adopt himself to new conditions. One of the problems confronting the passenger car dealer taking on a line of trucks has been educating the public to the fact. Another has been the choice of salesmen and the education of those whose training has been confined to exploiting the passenger car.

Select Trained Heads

The problem of securing efficient salesmen has been solved in several ways. Many dealers have taken the path of least resistance and placed their commercial car department in charge of a trained truck salesman who either selected his staff from more or less experienced truck salesmen, or began an intensive educational campaign to develop raw material. Both plans have been successful. The last named method has been favored by many as it made possible the retention of their passenger car salesmen, a number of whom have proven very efficient merchandisers of trucks after they were taught that **the fundamental principle in selling trucks is to analyze the prospect's requirements and to sell him a truck best adapted to the work and not to sell him a 5-ton truck when a 2-ton capacity is needed.** This fault is not alone confined to the new salesman.

Mechanical Training Aids

In several cases that have come to the attention of the writer the schooling of the passenger car salesman in commercial car construction and even operation has proven very beneficial. This is a plan that is being taken up by even older truck dealers with good results. It does not involve a technical training, but provides for teaching the salesman the various components of the truck chassis sold by him—**and he should know the good points of the trucks sold by his competitors as well as his own, for the business man interested in trucks is not in sympathy with a "knocker."**

Introducing the Truck

While conventional methods attain success in acquainting the public with the fact "that Brown, Smith & Jones, well known distributors of the Sunlight cars, the car capable of 100 miles on a gallon of gasoline, etc., has taken the agency of the Haulitall trucks," some passenger car dealers inaugurating a truck sales campaign have sidestepped the older methods and injected a little originality in their publicity campaigns. An example is noted in the case of the Colt-Stratton Co., New York City, distributors for the Dodge car, who took on the Day-Elder trucks. Instead of pursuing the conventional methods this concern broke the ice by a Motor Transportation Conference, the details of which were described in the December issue of the COMMERCIAL CAR JOURNAL.

Novel Method of Obtaining Leads

Now this conference served a number of useful purposes. It not only introduced the Day-Elder truck and Colt-Stratton as truck dealers in New York and vicinity and obtained a barrel of publicity because of its novel features, but **provided hundreds of leads unconsciously supplied by the visitors signing cards giving name, address and business.** And the majority were good, live prospects.

The conference was followed up by what Fred Colver, manager of the truck department, terms the idle truck bureau, "The Connecting Link Between Goods to be Hauled and the Truck to Haul Them," as the newspaper copy was headed in display type. The body of the advertisement was as follows:

Our object in establishing this Bureau is primarily to further the interests of Day-Elder truck owners without cost to them. It is not confined to them, however, for we mean to render 100 per cent. efficient service and will gladly register owners of other trucks when stress of demand requires us to go outside of the number of Day-Elder trucks available at the moment.

If you are a business man desiring the services of a motor truck for the transportation of merchandise you simply telephone your requirements to Columbus 7100 and we will immediately arrange to put in touch with you a responsible owner of a Day-Elder truck. This service is rendered without any fees whatever and implies no obligation on the part of the merchant who requests it.

We will be glad to explain the plan in detail to both truck owners and shippers on request.

Principle of Plan

The plan, primarily, encourages the prospect to buy for the dealer, co-operates with the purchaser in keeping the truck busy after it is placed in service. This is appreciated by the owner not familiar with the many angles of selling transportation and the service by the dealer goes a step further as it **makes provision for advising the owner how to take proper care of the truck and to obtain maximum returns with minimum costs.** As indicated by the copy, owners of other trucks are registered and the service is available to them. This brings the bureau (and sales manager) in contact with them, and it is but logical to assume that an effort will be made to introduce the truck sold by the company when the opportunity arises.

Supplies Live Prospects

Merchants owning trucks and calling upon the idle bureau for trucks as well as business concerns not owning trucks, supply leads for the salesmen and the plan has the advantage conserving the time of the salesman, too often wasted, digging out prospects. There is another angle worthy of consideration and that is it is more than probable that the continual hiring of trucks on the idle bureau plan will **plant the thought in the mind of the prospect that he can save money by purchasing his own machines.**

The idle bureau of the Colt-Stratton Co. is conducted somewhat similar to the Return Loads Bureau in that registrants file data dealing with the make of truck, capacity, type of body, etc., and this information is so indexed by a card system that the operator of the bureau can readily supply one or more desired types. Idle trucks are registered daily, and it is the policy of the bureau to supply a truck best adapted to the work of the merchant. The bureau does not assume any responsibility, but does register responsible truck owners. The matter of rates is between the merchant and truckman.

Although in operation but a short time, the bureau has been the means of con-

Protect Your Truck With—

Firestone

Giant Cord Tires

ON these massive Giant Cord Tires you can carry heavy, fragile loads, at express truck speed, with maximum protection to load and truck. For intercity passenger and fast trucking service between distant points, they make the ideal Truck Tire equipment.

There are many classes of service, each demanding tires of different types. Truck operation on pneumatic equipment presents unlimited possibilities of development.

Firestone makes a tire suited for every road, load and condition of service.

Half the Truck Tonnage of America is Carried on Firestone Tires

FIRESTONE TIRE & RUBBER CO.
FIRESTONE PARK AKRON, OHIO
BRANCHES AND DEALERS EVERYWHERE

necting the truckmen with shippers to an extent that has amply repaid the promoters of the plan for their efforts. A considerable volume of merchandise has been moved to say nothing of building material, while the emergency short hauls have been numerous. The cost of operating the bureau is negligible, one person having charge of the records and calls. The expense of conducting the bureau is charged to the sales department.

Foreign Trade Opportunity

W. C. L. Lamot, 22 Northumberland Ave., London, W. C., announces that he desires to get in touch with an American firm wishing to establish an agency in Belgium for the sale of any class of goods. He is willing to undertake the sole agency for Belgium for the sale of any goods which will be useful in the reconstruction of that country. Mr. Lamot was established in Antwerp from 1907 until the outbreak of the war, as importer and exporter, acting as shipping agent on his own account. Since the outbreak of the war he has been established in London as a general merchant and commission agent. Mr. Lamot is a member of the Government Advisory Committee for Belgian Inland Transportation, of London, and is connected in the capacity of officer, with various other societies devoted to the work of reconstruction in Belgium.

Technical Experts in Army Desire Positions

WASHINGTON, Dec. 16.—The United States Employment Service has issued an appeal to employers in need of technical and other highly trained men to take on qualified men from the commissioned and enlisted ranks of the army who are now leaving the camps.

Among the men of this high type applying at the Federal Employment Service are engineers and other technical men, executives, chemists, statisticians, purchasing agents, employment managers, cost accountants, etc.

All employers wishing to get in touch with these men should communicate with the Professional Section, United States Employment Service. Department of Labor, Washington, D. C.

New Wheel Company in Youngstown

YOUNGSTOWN, OHIO, Dec. 18.—The Reliance Wheel Company has been organized with a capital of $100,000 to produce a new type of double disk wheel for use on motor cars, trucks. airplanes and tractors. The officers of the new company are: Joseph M. Crenan, president and general manager; T. Ed. Milliken and A. J. Engel, vice-presidents, and A. A. Aull, treasurer.

Territory Should be Left Open Unless Proper Type of Tractor Dealer Can be Obtained

WHAT are the essential qualifications in selecting a tractor agent? This question was propounded to H. E. Lewis, manager of the Central Illinois branch of the Moline Plow Co., with headquarters and distributing plant in Bloomington, Ill. Mr. Lewis named three as vital. First, a dealer who can finance such an agency adequately; second, one who knows how to sell tractors; third, one who can supply the necessary service to machines after they are sold.

If such a man cannot be found, Mr. Lewis believes that the territory should be left open. He asserted that he would much prefer to leave the district without a representative than to appoint one who did not measure up to the standard he thought imperative. He cited several instances where many months had been consumed and heavy expense accrued, in sending investigators to determine the respective attributes of the various prospects. A careful study was made of each before a selection was finally made. In some instances several trips were made by representatives, and occasionally Mr. Lewis went to the district personally. In some cases the right man is still in the future and no selection has been made.

Preference, naturally, is given to dealers who have handled farm implements manufactured by the Moline company. If such dealers will not take on the tractor line, then an effort is made to engage a dealer who has been handling trucks or passenger cars. In all cases, the element of service is amplified. It is pointed out that the dealer who is best qualified to take care of trouble and who is the quickest to respond to an appeal for help, is certain to be the best advertised in the rural districts, and business will naturally gravitate toward him. Mr. Lewis encourages all of his representatives to fit up a service truck which can operate upon the same principle as a steam railroad wrecking outfit, equipped to take care of any emergency, and all set to respond to every call with the minimum of delay.

The home office in Bloomington carries a complete line of parts, but each agent is encouraged to keep a variety on hand also, in order to eliminate delay when such waste of time would be costly to the tractor owner. Mr. Lewis feels that the time has arrived when the curbstone tractor dealer must be eliminated. It is a case of the survival of the fittest, and it is far better to have a substantial, well-qualified representative than one who lacks the energy, progressiveness and pushing qualities of those who succeed.

With the agent secured, the next step of the manufacturer is to help him dispose of tractors and drill him in the elements of successful salesmanship and aid him in locating prospects by intensive advertising and other publicity methods. Mr. Lewis finds that too many tractor salesmen enlarge upon the plowing feature of such a machine. In other words implying that the tractor is but a two-months' machine. Instead, prospects should be impressed with the fact that plowing constitutes but 8 per cent. of the work upon the farm and that the tractor can take care of the other 92 per cent. fully as efficiently. There is almost no limit to what it can do in taking the place of horses, and the successful salesman must be able to enlarge upon this point and demonstrate that the tractor is a twelve months' proposition instead of a two months' active and ten months' passive.

The tractor business, according to Mr. Lewis, is yet in its infancy. He believes that within five years at least one out of every five farmers will own one. At present the proportion is about one to a hundred. The tractor, says Mr. Lewis, will have a tendency to turn many men back to the farm who had retired because of the heavy work. With the great improvements in such machines and the multiplicity of combinations of implements, farming becomes more scientific and less laborious with each succeeding year. The tractor is solving the problem of labor scarcity and making the farmer independent and prosperous. Manufacturers are just on the edge of the tractor industry. The machines that are well constructed, economically operated, thoroughly serviced, and well presented, will endure.

Automobile Prohibition in Straits Settlements Removed

WASHINGTON, Dec. 12.—The proclamation of May 16, 1917, which prohibited the importation into Straits Settlements and the Federated Malay States of automobiles, traction engines and chassis, parts and accessories thereof, has been revoked, according to a cablegram of December 9 from the American consul general at Singapore.

Universal Motor Co., Oshkosh, Wis., manufacturer of direct-connected generating systems for lighting and power, has increased its capital from $50,000 to $100,000.

The Steering Gear *and* its Importance

ROSS GEARS

WHILE the steering gear is far from being the most expensive unit in the truck, most engineers will agree that it is one of the most important.

Considering the element of safety, there is no other part upon which so much dependence must be placed. Every minute that it is in operation, the *safety* of the truck and its load depends largely upon the *steering gear.*

The steering wheel is the chief point of contact which the driver has with his truck — the mechanism through which he *knows* it most intimately. He will like it or dislike it and his efficiency will be increased or decreased according to the ease with which the truck steers.

That these vital points were carefully and successfully considered in the design of the Ross Steering Gears is demonstrated in the esteem in which they are held by motor truck engineers. Over 115 manufacturers, representing considerably over half the industry, are now using them as standard equipment, among the number being many of the largest and best known makers in the country.

The special feature of Ross Gears which distinguishes them from all others is the screw and nut mechanism which transfers the rotation of the steering wheel to the steering arm. The nut is a solid piece, completely enveloping the screw, so that the *entire bearing surfaces of the threads of both screw and nut are utilized.*

These enormous bearing surfaces, together with the quality of Ross material and workmanship, guarantee *easy steering* and *reliable* and *satisfactory service.*

Write for catalog and any special information desired.

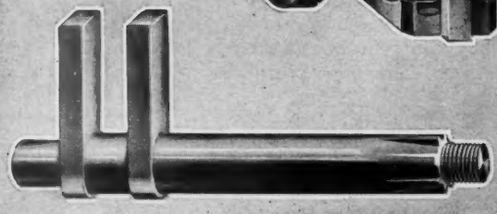
The SCREW

This screw is completely enveloped by the nut, thus utilizing all of the bearing surface of every thread in both screw and nut.

The NUT

This nut travels up or down inside the steering gear housing, rotating the cylindrical discs in their recesses. These discs receive the projecting arms of the trunnion shaft and rotate it in turn.

Compare the enormous bearing surfaces thus shown in Ross Steering Gears with other designs in which only three or four teeth are in contact at one time.



The TRUNNION SHAFT

This shaft moves the steering arm forward or backward when it is rotated, through its projecting arms by the rotation of the cylindrical discs in the nut.

The Steering Gears *that* PREDOMINATE *on* Motor Trucks

ROSS GEAR & TOOL COMPANY, 760 Heath St., Lafayette, Ind.

How the Motor Truck Co-ordinates the Interests of the Transfer Men

By JOE KELLY

THE motor truck has changed the business life and ideals of the transfer man. In Indianapolis, the transfer men, recognizing themselves as real business men, performing their part of the division of labor in the community, have organized themselves into the Indianapoils Transfer Association and have attempted to bring about reforms necessary to their business—reforms in themselves and in conditions affecting their business.

Thomas F. Snyder, with offices in the Chamber of Commerce building, is the executive secretary of the organization and he is watching the many social and economic elements that determine the success of the transfer business.

For the modern motor truck is the medium by which all local and intercommunity hauling is done. It is the motor truck, and the method of operation, care, etc., that lead to success in the transfer business.

A visit to Snyder shows first of all a secretary who is keen to the problems of transportation, a man who measures highway transportation as one of the trinity of which railroads and waterways make up the remainder.

"Do you remember the transfer man of your old home town?" Snyder asked me.

"I do."

"Do you remember the man who waited at the inter-section of the two streets, across from the court house, 'longside of the building which housed the grocery store and the millinery shop with the law offices above?

"Do you remember his battered up wagon, his horse whose bones reflected the character of the transfer man?

"A picture of the life of the old home town, memories that you would not lose for the wealth of the ages, yet you must admit that that transfer man was far from the hauling efficiency expert of the town. Slow and lacked hustle, and he did not perform the service that modern life exacts.

"He served the purpose in those days, when the demands for more and more work, more and more saving of time were not so great, when we were not so anxious of giving more and more service at lowered costs.

"The modern transfer man—what of him?

"He's not standing by the corner waiting for business. His ear is at the telephone, so to speak, answering the call for service, selling his service through business promotion, after the way of the drummer who came to the old home town to win business for the big wholesale store of the metropolis.

"The bridge to the new order has been the motor truck.

"The modern transfer man has a fleet of twenty trucks and a clerk, with 'pep' and good judgment and initiative to receive these orders for transportation and to see that they are carried out with the big idea of big service.

"One or several of these trucks are ready on short notice to haul the load of up to five tons as far as 100 miles with delivery safe and sure the next day.

"It's quicker than transportation by rail and less expensive when all costs are considered, and the service is much better. And freight cars are given over to long hauls, where they will be needed in the work of reconstruction. For the man who is to haul 100 miles or less, the motor truck is the proper vehicle, just as the railroad is for the man who is to haul 1000 miles.

Modern Transfer Business Requires Business Efficiency

"As in every business, the transfer man has developed efficiency. He's not doing 'odd jobs' now with the business enthusiasm of the 'odd job' man. The heads of these transfer businesses are men who think in terms of business efficiency.

"Take the transfer man in Indianapolis. He ought to be typical. Our community should be typical. He has worked out a cost system. Leakages have been stopped. He has learned the lesson of community co-operation. He has lined up his interests with the good roads movement, the return loads movement, with the big things that the state council of defense and the national council of defense have been trying to do to make the motor truck more and more efficient."

Ninety per cent. of the men in Indianapolis who do transferring are members of the Indianapolis Transfer Association.

This organization has been interested in the saving of all waste power in hauling, in getting rid of the things making for lack of economy and seeing that, as far as possible, trucks are filled both ways.

Co-operating With the Small Transfer Man

The Indianapolis Transfer Association has preached the gospel of co-operating with the men back of the return loads movement. Individual transfer men have given up business to competitors because the competitors were able to haul more economically. Tomorrow, perhaps, there will be reciprocity and the favor will be returned.

With sane co-operation, goods may be hauled economically, as evidenced by several instances cited by Secretary Snyder. A transfer man was sending a five-ton truck to Columbus, O., for a load, and, of course, called the Return Loads Bureau, asking for a load to the Ohio capitol.

The machinery of cooperation was put into effect. Other transfer men were called, asking for their hauling schedules. One firm was found which was about to send two trucks to Dayton, O. Another was found which was to send two trucks to Connersville, Ind., empty to bring back a shipment. Their interests were pooled and the process of economizing was made concrete to them.

The truck running empty to Columbus took one of the Dayton loads. The one truck making the trip to Dayton returned by Connersville, bringing back that shipment, releasing two more trucks. Thus two trucks were made to do work which might have engaged five.

A linotype machine was to be moved from Indianapolis to Logansport. A transfer man was found coming from Crawfordsville, Ind., with a load for Indianapolis. That load was given to a transfer man hauling from Logansport to Crawfordsville. He hauled the load to Indianapolis and then hauled the linotype to Logansport, his start, completing a chain of perfect hauling service.

Hauling is becoming a business—a real part of the division of labor. Jobbers, manufacturers and retailers—many of them—who maintained trucks to do a minimum amount of hauling—that amount being too small—have passed the work over to the men of the transfer association who do it under contract. Thus hauling becomes a specialized service, which can be done cheaper and better by the transfer man. However, where business houses have the proper amount of hauling and transferring to do, they can do it more profitably by properly maintaining their own trucks.

Hauling household goods has long been a big part of inter-community hauling. Practically all of this is now done in distances 100 miles or less by the motor truck—done because it is more advantageous to the mover. Household goods carried over the highways by the motor truck are loaded and unloaded but once, and these goods, loaded during the afternoon, can be delivered, 100 miles away, the next morning—a simple operation when compared to the delays and worries of transferring household goods by steam road.

The Indianapolis Transfer Association has been instrumental in obtaining better streets in Indianapolis. Their

Any Truck Owner who has been gouged and overcharged by a cross-roads "wood butcher," taking advantage of his plight from wheel failure, or has had to put up with intolerable *delay* waiting for wheel replacements, the resulting *expense* of an idle truck, the *loss of service* while overhead costs mount up, keenly senses the great advantage of *a wheel that never fails!*

Smith Wheels, Everlasting, to date have given a total of more than

301,276,801

miles of road service. The daily average increase of Smith Wheel mileage is figured now at

766,663

miles. Of the many thousand in use not one has failed, as evidenced by the fact that we have never been called upon to replace a Smith Wheel.

They never need a wheelwright anywhere.

More than that, Smith Wheels give much greater Tire and Gasoline mileage than other wheels and lengthen materially the service term of the truck, for whose LIFETIME they are guaranteed.

Now that the war is over, those truck makers who are desirous of giving the trade a well-made truck, that will give continued service with maximum satisfaction at minimum cost, are, in large numbers, equipping with Smith Wheels, believing that they go a long step toward selling the truck, keeping it sold, and selling another.

SMITH WHEEL INC.
SYRACUSE, N.Y. U.S.A.

costs systems have been based upon out of the way drives, over good streets, rather than by the more direct routes over bad streets. This has been pointed out to city officials and remedial measures taken.

Bad streets are tabooed in hauling, so that breakage of merchandise as well as motor truck equipment is avoided. This association, watching the conditions affecting their business, made a survey of round-about hauls due to closed streets necessary to elevating the railroad tracks in Indianapolis. This survey showed that these hauls were causing an industrial loss of $25,000 daily.

This information was furnished Railroad Director General McAdoo and the track elevation, which has been ordered stopped during the war by the Indiana Council of Defense, was ordered completed.

The Indiana transfer man sees how he can aid to bring about better roads, better organizations, better co-operation with the needs of community life. For instance, the truckman sees in Indiana a far away dream in which all truckmen will be affiliated and there will be state and county organizations, properly administered, so that the business of overland transportation shall take its place alongside of railroad and waterway transportation.

Falls Motors Company Elects Officers

SHEBOYGAN, WIS., Dec. 20.—Falls Motors Co. has elected the following officers for the coming year: E. J. Lonn, LaPorte, Ind., president; P. A. Walker, Kewanee, Ill., first vice-president; L. G. Blessing, Chicago, second vice-president; and G. G. Brandenburg, Chicago, general manager.

New Exposition Corporation

ALBANY, N. Y., Dec. 17.—Secretary of State, Francis M. Hugo, has granted a charter to the Motor Truck and Tractor Exposition Corporation, New York City. The capital of the corporation is $50,000 and directors include: Lester C. Burdett, George W. Study and A. H. Weisker.

Effective Lubrication Records

Commercial Car Journal.

To the Editor:—Am enclosing truck lubrication forms, drawn up by myself, for use on a U. S. Ordnance department construction contract, where there has been considerable change of drivers and a very considerable number of cars in service. The smaller form (6¼ x 8 in.) is placed on the dash of each car in a Pyralin front case, easily removed and visible at all times, as a reminder and aid for checking. The larger one is placed in a convenient place, on the wall in the office, so as to provide a means of calling in cars for inspection, on the date scheduled, and as a record of care given each car. We have established a weekly schedule and when the car record has been marked up, then the inspector reports to the office that car No. 00 has been properly oiled and the date is checked opposite the car No. 00 on the office record. We have found that lack of lubrication has been the biggest factor in increasing depreciation and keeping cars out of service. With the aid of this system we have avoided this to a great extent.

Earl Farr,

Pleasantville, New Jersey.

Fordson Dealers Meet at Tractor Plant

DETROIT, Dec. 9.—The association of Fordson distributors has been recognized by Henry Ford & Son, and a conference held at the Fordson tractor plant was attended by more than 100 distributors and executive men in the employ of the company. Open discussions of the prospects for the coming year took up a great part of the conference.

Tractors will be shipped by Henry Ford & Son in carload lots hereafter, payable upon delivery and not with sight draft attached to bill-of-lading, as has been the custom heretofore. It was decided at the conference that there will be no immediate change in the price of Fordsons, which will continue at $750 f.o.b. Dearborn.

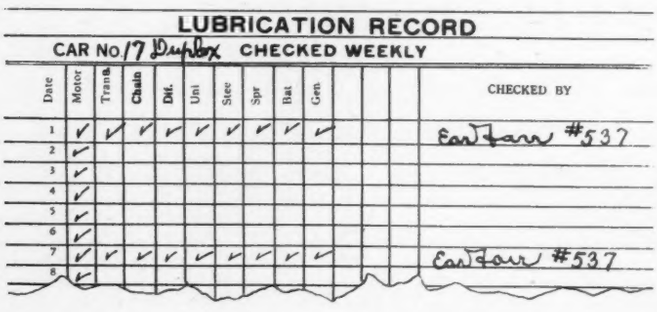
Selden Division Sales Managers Meet

ROCHESTER, N. Y., Dec. 16.—The annual sales conference of the division sales managers of the Selden Truck Sales Co. was attended by representatives of the company from every state. The program included a tour of the factory and several profitable meetings, at which addresses and discussions were conducted with a view of furthering co-operation between the factory and the sales organization.

At a meeting of the board of directors of the company a dividend of 5 per cent. on the first preferred stock, payable January 2, 1919, was declared.

La France Company Operates Motor Express

ELMIRA, N. Y., Dec. 16.—La France Motor Express Co., with main offices at the building of the La France Garage Co., Elmira, and with terminal at Binghamton, will operate a motor express between these cities. Trucks will leave both Elmira and Binghamton every morning, giving a round trip service between these cities every day. Charges will be about equal to railway express rates, but for short hauls will be considerably less, and for freight shipments amounting to 500 to 1000 pounds or more a special freight rate will be in effect. Three-ton Ward La France trucks are used and the company plans to employ trailers. Frank B. Alley is general manager of the company.

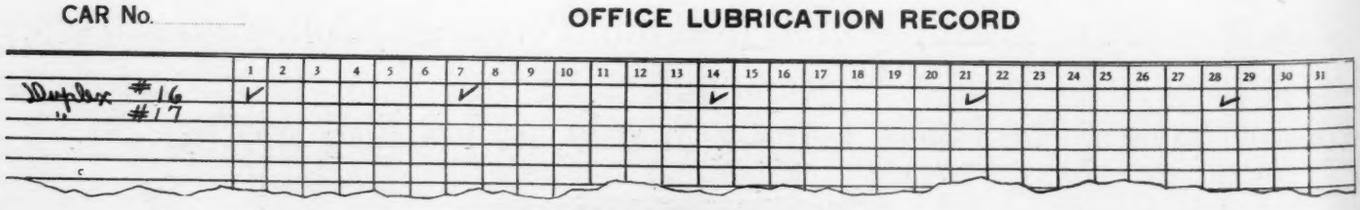

LUBRICATION RECORD

CAR No. 17 Duplex CHECKED WEEKLY

Date	Motor	Trans.	Chain	Dif.	Uni	Stee	Spr	Bat	Gen				CHECKED BY
1	✓	✓	✓	✓	✓	✓	✓	✓	✓				Eastern #537
2	✓												
3	✓												
4	✓												
5	✓												
6	✓												
7	✓	✓	✓	✓	✓	✓	✓	✓	✓				Eastern #537
8	✓												

Car Lubrication Record

This form is placed on dash of car in Pyralin-front case, easily removed and a visible reminder. Full size of sheet, 6¼ x 8 inches.

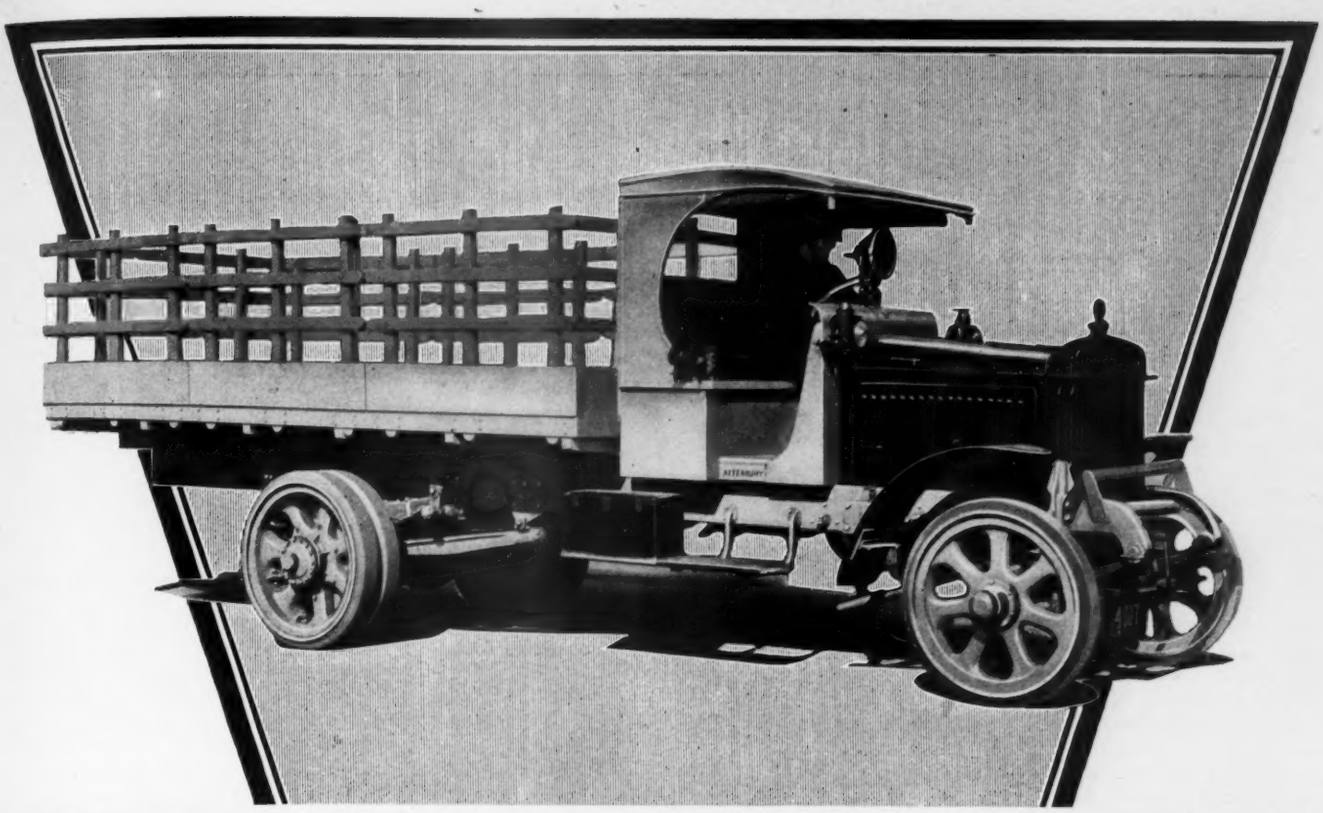

CAR No. .....

OFFICE LUBRICATION RECORD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Duplex #16	✓						✓							✓							✓							✓			
" #17																															

Office Lubrication Record

This record is placed on office wall; provides a means for calling in cars for inspection on date scheduled, and as a record for each car. Full size of sheet, 9½ x 12 inches



Why Atterbury dealers will make more money in 1919

1918 was a great year for our dealers.

Because they could sell all the Atterburys they could get—

And because, in spite of our government requirements, we took care of our dealers.

They'll make *more* money in 1919.

Because they can still sell all the Atterburys they can get—and they can get more.

The market for Atterburys is as steady as Atterbury performance.

It pays to be an Atterbury dealer. Investigate.

ATTERBURY MOTOR CAR CO.
BUFFALO, N. Y.

ATTERBURY

MOTOR TRUCKS OF MAXIMUM SERVICE

Farmers Showing Greater Interest in Trucks

A. L. Clark, of the Bureau of Markets, Sees Great Future for Trucks in the Farming Districts of New Jersey. An Opportunity for Truck Dealers to Start Early Solicitations

By C. P. SHATTUCK

ONE of the direct results of the activities of the Highways Transport Committee of Washington, has been an increasing use of commercial cars in agricultural districts in the State of New Jersey, according to A. L. Clark, Bureau of Markets, and chairman of the Rural Express division of the New Jersey Highways Transport Committee. Mr. Clark, who was appointed in September by the chairman of the committee, has made a very thorough study of the possibilities of the motor truck for transporting the products of the farm and through the co-operation of the county agents has obtained much interesting data as to the use of commercial cars by the farmer, individual owner and companies operating trucks.

Wonderful Opportunities for Trucks

Mr. Clark is exceedingly optimistic over the plan of using trucks to transport the products of the farmer, particularly the man who does not market his surplus garden products. He also gives several concrete examples of the practicability of trucking farm products to the cities and cites several instances of men who have built up large and profitable businesses.

"The rapidity with which New Jersey farmers have availed themselves of the services of commercial cars," said Mr. Clark, "has astonished all but those who are well acquainted with the rural business attitude. While the average farmer has waited until their efficiency was proved, plenty of pioneers helped by their experiences to pave the way for the present use. One who still retains the idea that farmers are conservative and must be educated and shown the new ways and methods, will find by a very cursory study that he must reconstruct his thoughts. Farming is a rural industry, and students of urban industries are apt not to make allowances for the fundamental differences, the nature of which may not be understood.

Increasing Interest in Trucks

"The increasing interest by farmers in trucks has been noted for several years. For a short distance hauling to shipping stations and nearby markets, a number were used through Burlington and Gloucester Counties in 1914. In 1916 a well known fruit and vegetable grower spoke at a Farmers' Institute in Gloucester County, and gave his experience in using trucks for long distance market hauling. Beginning in 1915 he found that under his conditions, either owned or rented trucks were superior to railroad service in shipping his products to New York, a distance of 80 miles. He recommended at that time, well made, large capacity trucks. The advantages to him were speed, reliability, and close contact with his commission merchants. It may be added that the freight service over the line he shipped on has since been improved.

Hauls by Trucks to Market

"The J. L. Lippincott Co., of Riverton, soon began trucking produce both to New York and Newark. (This was described in the October number of the COMMERCIAL CAR JOURNAL.) From this beginning of long distance hauling the practice has increased, so that during the past season more than 100 motor trucks have rumbled over the State highways leading out of Burlington County, headed for New York, on a single night. While this particular phase was developing, the use of motor trucks in other sections was increasing to the same extent. In the Richfield and Fairlawn sections of Passaic and Bergen Counties, farm after farm purchased trucks. Paterson, Newark, and New York are the markets for this garden section and the short hauls over the improved level roads allowed very heavy loading of large trucks.

Many Trucks to Philadelphia

"In Burlington, Camden and Gloucester Counties motor trucks have been substituted for mule teams by many of the growers marketing in Philadelphia. The roads leading to the four principal ferries that carry freight from Camden across to Philadelphia, present a parade-like appearance every night from July to October.

"In Cape May and Atlantic Counties motor trucks of a lighter type are coming into use to supply the hotels and cottages with the fresh produce of nearby farms. In the dairy counties, like Sussex and Salem, light trucks are coming into use to deliver the milk to the shipping stations while a few larger trucks have succeeded in establishing themselves on long collecting routes, delivering directly to distant market cities.

Making the Truck Pay

"A few regular routes are successfully meeting their obligations by collecting eggs and other farm produce at stated intervals, and making full loads out of many small shipments. Instances are becoming quite common of truck operators acting as carrier and commission salesman for a number of farmers. Perhaps J. M. Brock, of Columbus, built up as large a business as anyone in this line. For one week in August, Mr. Brock averaged 2700 baskets, besides some little bulk produce, on the Trenton Municipal Market each day. He owns three trucks and sometimes uses extra ones. Frequently two loads a day are carried on the same truck as the round trip is only 35 miles. Other and more distant markets are often patronized. The method of collecting and merchandising employed by Mr. Brock was fully described in the October issue of THE COMMERCIAL CAR JOURNAL.

Disposing of Loads

"The opening of some 20 municipal markets in as many New Jersey cities during the past three years has offered excellent opportunities for this kind of service. In Perth Amboy, Elizabeth, New Brunswick, and many other cities, truck operators are found who collect the produce from several farms and sell for a stipulated commission. Where the distance is from six to ten miles, a haulage charge of five cents a basket or ten cents a 100 lb. is sometimes made. One man hauls nearly 20 miles for seven cents per basket.

"Where hauling and selling is done by the same party, charges vary. One man hauls ten miles and sells at wholesale for 15 per cent. Another hauls eight miles and sells at retail for 20 per cent. In one case a commission of ten cents is charged for selling alone, mostly at wholesale, but an increasing proposition at retail.

"Practically all of the farm-owned trucks return even from long hauls entirely empty. Some of the commercial hauling firms, which are employed at the height of the season by large growers, try to arrange for some part of a load on the return trips.

Opportunity for Companies

"Experienced and reliable drivers are scarce, and many farmers are of the opinion that where long hauls are necessary, commercial trucking firms can do the work better than they can.

"Thus in barely three years motor trucks for market hauling have multiplied many times on our New Jersey farms, and are doing many things each

Clark Internal-Gear Axles Transmit Maximum Driving Efficiency to Motor Trucks

The electric train, electric street car, hoisting engine, derrick, steam shovel, tank, rotary shear and various types of power machinery utilize the *gear* principle for the transmission of maximum *power*.

CLARK
Rear Axles · Steel Wheels · Locking Differentials
For Motor Trucks
EQUIPMENT

Motor trucks equipped with Clark Internal-Gear Axles and Clark Cast Disc Steel Wheels continually deliver maximum loads at minimum costs.

Clark Axles and Wheels are built to solve heavy transportation problems.

Clark Equipment is found only on Good Motor Trucks

CLARK EQUIPMENT COMPANY
BUCHANAN — MICHIGAN

year which experts admitted were impracticable only the year before. It is worth noting that delays and mechanical troubles which would be expected in such work have been surprisingly few. Frequent accidents occur, but the majority of these are caused by carelessness. Collisions at corners and slewing off the roadside into the ditch seem to be most common.

"There seem to be several distinct opportunities in this work. Where farmers prefer to remain on their farms and give the hauling and selling over to someone else, the truck owner who is a good salesman or can develop sufficient ability in this line, can find excellent municipal markets in most of the larger cities from Atlantic City all the way up to Morristown.

How to Lay Out Routes

"The man will own his own truck or trucks and accidents will be infrequent, his maintenance costs will be low and by the exercise of good judgment, a permanent business can be built up on the confidence of his neighbors and patrons. Where large growers are served it may be well to accept the goods only if delivered at the garage or leading house. This eliminates the extra cost of a lighter truck for collection work. Farms can usually send their stuff a mile or two by team with comparatively little trouble. Where many small lots constitute the load, it will be cheaper to lay out routes so that one end starts at the home garage and the other end is the market. Several more or less winding and roundabout routes can thus be laid out from a home 5 to 20 miles away from a city, and each route traveled two days a week. If the farmers along the way will place their produce out by the roadside many small lots can be collected in a few hours. As retail selling may take longer than wholesaling, a higher charge may be necessary.

Will Promote Sales

"The Bureau of Markets of the State Department of Agriculture has assisted some 20 cities to establish farmers' market places and where simple but practical rules are laid down, it has been found that relatively large loads can be sold at retail just about as quickly as at wholesale. This may seem to be a peculiar statement but nevertheless one which several large market patrons will vouch for after this past season's experience.

"Commercial trucking companies should be alive to the opportunities afforded in securing business both for entire season hauling from some farms and for short period services, as for instance, in the peach season. Where large firms take up this work it is necessary to deliver the goods either at stores or commission houses. The farmers who own motor trucks should use every effort to secure a full load for every trip. Frequently three or four farms can maintain a steady market supply when any one farm alone would have flush periods and sometimes almost nothing to market.

Tractor Will Aid

"Potato and grain farmers have so far not found the motor truck as necessary as fruit and vegetable growers have. As the tractor comes into more general use and the need of an expert mechanic increases as the need of extra horses decreases, motor trucks will undoubtedly prove an important instrument for efficient management.

"The Bureau of Markets is giving this entire subject constant study as it realizes the fundamental economy represented by the motor trucks and also the possibilities which may threaten transportation at any time during our present national emergency. It is apparent to all that such a subject is worthy of the most serious consideration, and that the industry as it may be called, should be so well understood that the full force of its service could be directed at short notice to any particular section of the state or to any definite need."

Farmers Approve Plan

That farmers will patronize trucks operating over a well defined route and on a predetermined schedule as suggested by Mr. Clark is the finding of the writer, who in September made trips through two counties in New Jersey with county agents, and interviewed the farmers. The majority were those who do not ship to the city markets because of a lack of shipping means. The greater number talked with, stated that they had a surplus of garden truck, etc., but it was not sufficient to warrant making a trip to the city. Others stated they sent their products by some neighbor owning a truck whenever it was possible.

The majority of the farmers interviewed were in favor of the plan of establishing routes as suggested in Mr. Clark's article. They said that they were planting less garden truck each year as there had been no way of marketing it. This applies to the farmer whose main crops were potatoes, etc., and who planted a garden for his own needs. Practically every farmer of this type stated that if he could be assured of transportation he would increase his production. One and all agreed that the crux of the plan was the disposition of the farm products and every farmer was vitally interested in the selling plan.

A tentative route was laid out; that is, one of about 25 miles, and the farmers were asked what and how much they would have ready on certain days of the week. Practically 75 per cent. of those seen and acquainted with the plan promised co-operation. Owing to the lateness of the season, it was decided not to place a truck in service, although one dealer agreed to supply a car for the initial trip. Since that time Mr. Clark and his staff have been working on the development of the plan, and it is believed that next spring will see a greatly increased number of trucks operating in the farming districts of New Jersey.

Ford Leaves Long Island City Plant

NEW YORK, Dec. 15.—The Ford plant at Long Island City, which was taken over by the Government for the duration of the war, has been offered for sale. The Ford Co. is planning to make its eastern headquarters in a plant to be erected near Newark, N. J.

The Long Island City plant is an eight-story building, containing 500,000 sq. ft. of floor space. It is of reinforced concrete flat slab construction. It is connected with the Long Island Railroad by sidings on which thirty cars can be assembled.

Fifty Towns Joined by Rural Express

FORT SMITH, ARK., Dec. 17.—A group of Fort Smith business men have formed a plan for the establishment of a motor express under the name of the Rural Motor Lines, and a central depot for the storage of freight has been established in this city. This motor service will link up approximately fifty towns in Arkansas and Oklahoma. It is estimated that fifteen trucks will be used over a route of about 300 miles.

Klaxon Has New Office in Detroit

DETROIT, Dec. 16.—The Klaxon Co., Newark, N. J., has established a general sales office for its motor equipment division at 3066 W. Grand Blvd. Sales, traffic and delivery, as well as the individual mechanical service furnished by the company, will be handled from this office. Frank B. Ruoff, who has for several years be in charge of the Detroit territory, has been appointed manager of the office.

A Motor Truck Employment Bureau

PHILADELPHIA, Dec. 12.—Armleder Motor Sales Co., distributor of Armleder trucks, is endeavoring to make motor truck hauling more profitable to truck owners by the establishment of an employment bureau. Truck owners in need of drivers or mechanics are invited to communicate with the company, and likewise drivers and mechanics desiring to secure situations are asked to get in touch with the bureau. Advertising copy bears the suggestive introduction "Have you an idle truck? Have you something to haul? Let's get together!"

Organization of a Rural Motor Express Line is the title of a booklet recently issued by the National Automobile Chamber of Commerce, 7 East 42nd St., New York City. This booklet will be gladly sent to anyone interested in establishing a Rural Motor Express line.

WEST STREET, NORTH RIVER FRONT, NEW YORK CITY—The 1918 picture indicates how the manufacturer within a radius of fifty miles can save time and labor over his methods of ten years ago, by delivering directly to the pier by motor truck without rehandling. In 1908 he shipped to New York by freight or express over the railroads and his goods were rehandled by horse-drawn wagons from the terminal to the ship.

Goods Must Move On Time

THE RAPID uninterrupted flow of goods from maker to market is essential.

DELAYS ARE COSTLY. A long-wearing tire contributes to the guarantee against delay.

FISK TRUCK TIRES, solid or pneumatic, are *long-wearing*.

CONSTANTLY INCREASING sales prove the confidence of careful buyers.

MADE in all types for every use.

WHEN in need of truck tires—buy Fisk.

FISK TRUCK TIRES

Stopping the Leak in the Truck Dealer's Business With Detailed Accounting

By WARREN EUGENE CRANE

WHEN the government income tax man desires a statement from the truck dealer, or his bank requires a clean-cut account of his assets and liabilities before it will grant him a loan, he will often stay up late for several nights in a vain effort to make an analysis of his business. At such a time he is brought face to face with the fact that he knows very little about the details of his business. He is able to tell the amount of his gross profits, but, as a rule, he has a very hazy idea of the exact amount of his overhead charges, his net profit on any particular car, and the percentage of running expenses that should properly be deducted from his gross receipts. What the dealer really needs is a system of bookkeeping that is so comprehensive that he can tell the exact status of his business within a comparatively short time. He should do this for the reason that one of the vital factors in any tradesman's success is the ability to ascertain the condition of his business without guess work.

Why Guessing Leads to Failure

The dealer should keep a record of the cost and selling price of each individual truck he sells. If he buys a truck for $1400 and sells it for $1700, it leaves him a gross profit of $300, but the average dealer is at sea over his overhead charges and makes a guess and says, "Well, the difference is my net profit." Can he guess it? No! The vital difference between success and failure in any business is between *knowing* and *guessing*. If a dealer is able to ascertain his exact overhead charges, he may find that they are eating up all of his gross profits and part of his capital. In such a case he might cut down on some of his expenses so that his business could run at a profit instead of a loss. For that reason, all of his expenditures should be divided and placed under thirty or forty different headings so that they can be readily analyzed. Many dealers may say: "This is too much bother." If they neglect this they are like the ostrich which pokes his head in the sand of the desert to escape approaching danger. The dealer should realize that with rents, wages and materials constantly increasing in price, he must have an intimate knowledge of every detail of his business so he can know where to cut down on his operation costs without materially injuring his business.

H. M. Miller, secretary and treasurer of the Seattle Automobile Company, one of the most successful truck and automobile agencies in the Northwest, has originated a system of sheets that makes it possible for him to know the average cost of carfare, postage, advertising, rent, salesman's commissions and other expenses. His business is on a perpetual inventory basis, and he can render a statement of the firm's liabilities and assets on very short notice. He keeps his cash receipts, check register and general journal all on separate sheets of loose leaf paper, for he has found from long experience as an auditor and public accountant that cash entries, both in and out, have no relation to a journal entry, for the latter merely represents a merchandise transaction of some sort.

Mr. Miller advocates one rule which he says all dealers should follow, as it is the vital secret of accurate accounting: "Deposit all money received intact. Never take any money out of receipts for expenses. Be sure and deposit them in the bank even though you are forced to draw them out ten minutes afterward."

The Petty Cash Fund

Another suggestion that Mr. Miller has for other dealers is as follows: "Establish a petty cash fund of $50 for sundry payments. Keep it for carfare, postage, express and little things for which you cannot conveniently issue checks. As soon as this petty cash fund gets low, draw more from your bank account to bring it up to $50. Never replenish it from your cash receipts before they are deposited in the bank. Keep an accurate account of the purpose of every expenditure from the petty cash. State whether it is postage, carfare or freight. Many firms let the petty cash go as a miscellaneous account, but they should not do it. Instead they should be able to know the exact percentage of the total overhead that each one of these expenses takes. They should be able to tell whether postage is one per cent. or five per cent. of their overhead. Information about matters of this kind gives the dealer the opportunity to discover and stop the small leaks that prove large when they recur year after year."

Many employes who would not steal money will appropriate car tickets and stamps for their personal use. If the employer has a record of these seemingly small things, he can check them over and discover if there are any discrepancies. The employe will hesitate to take these things if he thinks that there is a likelihood of their being entered against him.

All Expense Accounts Should be Divided

Another important factor in a successful bookkeeping system is a journal established on a voucher record system for detailed and extreme segregation of all expense accounts. The dealer should divide his leaf journal sheets into as many divisions as it is possible to carry, because it facilitates comparison and checking. If it varies remarkably from month to month, the auditor can investigate. The Seattle Automobile Company has divided its accounts as follows: General (carfare, etc.), Freight Expense, Light, Heat, Power, Office, Management, Printing, Postage and Stationery, Rent, Taxes, Telephone and Telegrams, Back and Doubtful Accounts, Used Cars, Chandler (Repair to new cars), New Building, Advertising (Classified), Brokerage, Commissions, Demonstration (Gasoline and Oil), Exchange (Drafts and Checks), Filing Fees, Interest, Insurance (Merchandise), Sales Expense, Traveling Expenses, Liability Insurance, Legal Expense, Advertising (Chandler), Advertising (Maxwell), Salaries (Maxwell), and Licenses.

One of the features of the Seattle Automobile Company's system is their method of putting their loose leaf cash receipt sheets, check register sheets and general entry checks under one cover, so that it will save the inconvenience of looking into three separate books. In addition to this they maintain a car sales record so that they can have a perpetual inventory by car and car number of every machine in the firm's possession at any time. They ascertain their net profit from the amount remaining after all of the detailed overhead is deducted from the gross profit.

Sale Transactions Filed in an Envelope

Many dealers have trouble in finding important documents when they need them very urgently, but Mr. F. J. Cook, treasurer of the Eldridge Buick Company, has devised a large envelope in which every step in a sale is kept in readiness for reference at any time. All orders that the salesmen secure are made out in triplicate. The original is retained by the sales manager until delivery is to be made, when it is turned over to the cashier. The duplicate is given to the customer as a copy of the order, and the triplicate goes to the garage superintendent, who fills out a delivery and checking list from it. It is then passed to the shop and garage foreman, who must check them up. When the car comes from the factory, the garage superintendent examines it very thoroughly and checks everything on the delivery sheet and checking list. Before the car can be released to the purchaser, both the foreman and purchaser have to sign it, vouching for the fact that it is complete. This leaves no opportunity for disputes later on.

When the car comes from the factory, a sales tag is made out on it, which shows the name of the purchaser, the make of the car, the model, the color, frame number, engine number, price and billing particulars. This is attached to

THE prompt and uninterrupted delivery of millions of Christmas boxes for overseas to the port from which they will be shipped is but one item of America's huge transportation program.

At such a time, when speed and dependable delivery are so vital—the use of the big 'NOBBY CORD' PNEUMATIC TRUCK TIRE tends to simplify all distribution problems by—

—insuring against tire trouble
—adding greater speed
—reducing vibration

'NOBBY CORDS' are built to carry heavy loads—and carry them quickly, dependably and economically.

United States Tires Are Good Tires

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

the back of the original order, and the cashier is requested to check them over to ascertain that they coincide. These are always put away together in the large envelope and placed in a fire-proof file, where they are ready for reference at any time. An invoice is sent with the conditional sale contract, which the customer signs in quadruplicate. This invoice, which is made out in duplicate, tells the model of the car as well as the serial number of the frame and the engine. Two copies of the contract are retained in the files of the company and one is sent to the county auditor and the other to the customer.

When the car has been delivered and the contract signed, a loose leaf ledger sheet is made out on it and put in the file. It shows the exact dates upon which the deferred payments fall due, and five days before the specified time, the company notifies the customer that his payment is due on a certain date. The firm has tried both sending it several days earlier and later than five days previous, but they have found that five days before the specified date was the ideal time, for the purchaser was likely to forget it if it was sent several days earlier and apt to be unprepared if it was sent only a day or two before the time agreed upon.

Many dealers lose a large amount of time in getting their filing numbers and receipts from the auditor, but the Eldridge Buick Company prevents this. They have an arrangement with the county auditor so that he sends them pads of blank receipts which they fill out and mail to him with the original contract and an explanatory letter. This facilitates matters so that they get their receipt and filing number almost immediately, thereby preventing any congestion in the company's accounting machinery.

A memorandum of sale is made out in duplicate on every order for a car, and one goes to the garage superintendent and the other to the foreman of the parts department, who puts extra parts and directions in the car so that it will be in readiness for delivery to its buyer nearly as soon as it arrives.

Sales Manager Keeps File of Cars Sold for Quick Reference

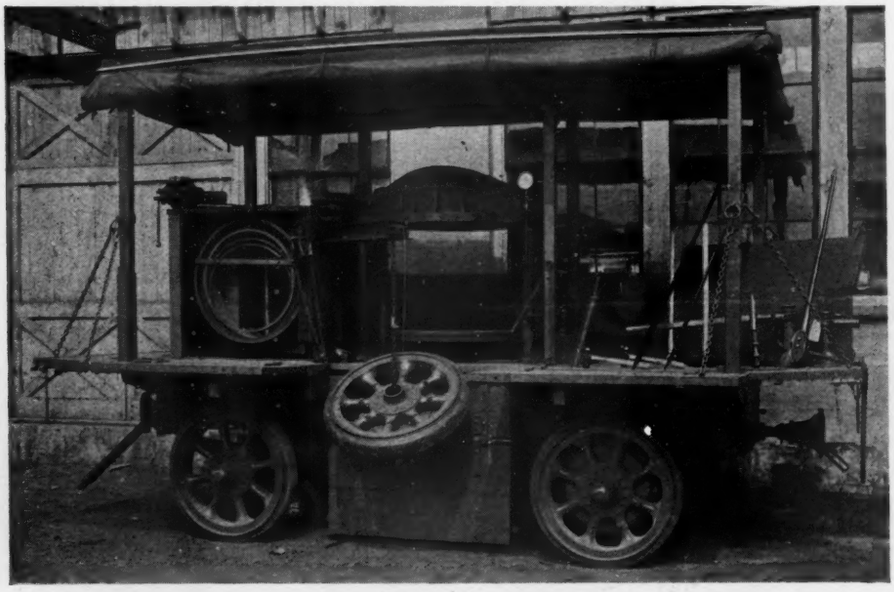
The sales manager retains a pink filing card on every car that is sold, to which he can refer and ascertain the exact date of the sale of the car and whether the guarantee is still in force. This often saves much confusion on his part, as he can tell at a glance the exact status and original cost of every car that has been sold in his salesroom. It also saves him time and the inconvenience of going to the bookkeeping department to obtain this information.

Many dealers do big repair jobs for their customers on verbal orders and have disputes with them over the amount of the bill after the work is done.

Large Shop Card Simplifies Bookkeeping System

One prominent Northwest dealer has designed a large shop job card 8½ x 11 in. in size which has to be filled out and placed on the car before it goes to the repair shop. On one side is the name and address of the owner, the license number, the job number, date and time wanted. There are separate columns for valves, bearings, carbon, ignition, magneto, carburetor, clutch, transmission, differential, axles, foot brakes, hand brakes, springs, radiators, pump, body, fenders, frame, wheels and painting. In addition there are several spaces for other things and a series of columns for the number of hours required as well as the number of the workman who did the job. There is also a space at the bottom for the signature of the person who tested the job. On the other side of the card there are spaces for materials and parts with columns for quantity pad numbers, model, description, price and remarks. This card takes the place of a large number of duplicate sheets that are used in other shops and tends to simplify the company's bookkeeping system. It leaves no doubt in repair man's mind about exact nature of work to be done.

The progressive truck dealer should be ready to make improvements in his bookkeeping wherever possible, so that it will furnish him an accurate record of his business and also act as a guide to light his way in future transactions.



Tire Press Used by Our Army in France

This trailer makes a complete mobile tire repair shop. The chassis is thirteen feet long, and its capacity is five tons. The trailers were mounted on Smith wheels and were fitted with Arcadia special internal-expansion knuckle brakes on one pair of wheels. The trailers are reversible. These trailers were sold to the Government and shipped to France, in order that the army might have mobile tire repair equipment on the field, thus saving all the time, expense and annoyance of being obliged to send the trucks to some central tire repair station. The outfit is manufactured by the Arcadia Trailer Corporation, Newark, New York.

Court Reverses Decision in Tire Case

AKRON, OHIO, Dec. 18.—With the decision recently handed down by the United States court of appeals in Cincinnati, in favor of the Firestone Tire & Rubber Co., litigation in progress since 1914 has been brought to a close. In that year suit was brought against the Firestone company by F. A. Seiberling, president of the Goodyear Tire & Rubber Co., for infringement of alleged basic patents. Since these patents were alleged to be basic on the manufacture of pneumatic tires by machinery, the suit affected not only the Firestone company, but, indirectly, all manufacturers of pneumatic tires. The case has been fought through the courts until the present time, when the United States court of appeals of Cleveland, reversed the decision of the district court, with instructions to dismiss the bill, and declared the Seiberling and Stevens patents and the State patent invalid.

Engineers Visit Standard Aircraft Plant

ELIZABETH, N. J., Dec. 16.—About sixty members of the metropolitan section of the Society of Automotive Engineers visited and inspected the plant of the Standard Aircraft Corp. here today. Before going through the big airplane factory, the members of the society were the guests of the Standard Aircraft Corporation at a luncheon. The tour of the factory included an afternoon session, with motion pictures and addresses.

Jaxon Steel Products Co., Jackson, Mich., announces that the company will return at once to a peace basis. Before the war this company produced 27,000 rims and rim parts per day. During the past year the factory has been devoted almost entirely to government work.

GUARANTY PLAN BANKING

EVERY progressive truck dealer maintains two banking connections.

One of these is properly with his local bank for current deposits and expenses.

The other should be with the strongest banking institution specializing in the discount of automobile paper.

A connection with such an institution gives the dealer a certainty of being able to finance his receivables irrespective of local money-market conditions.

Continental Guaranty Corporation, known until April 15th as Guaranty Securities Corporation, has the largest resources of any banking institution in the world devoting its exclusive attention to automobile financing.

Resources of over $10,000,000.00, a strong organization, a clean-cut, four-square policy, and an abiding faith in the automobile industry have put the institution in the foremost place.

We solicit inquiries from responsible, well-rated merchants of trucks, who would like to discuss the matter of opening an account with us. Your inquiry places you under no obligation.

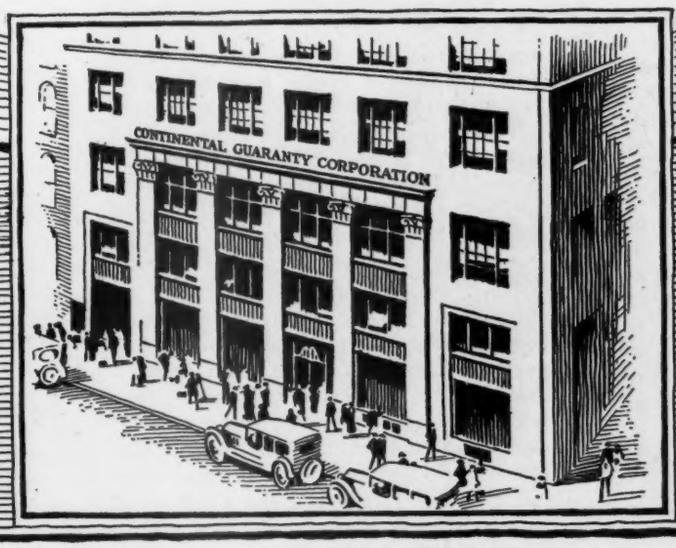
Continental Guaranty Corporation

Continental Guaranty Building **New York City**

San Francisco **Montreal**

Affiliated with Guaranty Banking Corporation
Continental and Commercial Bank Building, Chicago, Illinois

110,000 trucks and automobiles (worth over $100,000,000) financed up to Nov. 30, 1918



Motor Truck Trains*

I DARESAY that all truck operators here are more or less conversant with the trailer proposition, yet I venture to say that you have not given the trailer proposition quite the thought and consideration that it really merits. I will go even further than that: I don't believe the trailer manufacturers themselves quite realize at this time the wide scope of usefulness that the trailer is bound to enjoy. Trailer manufacturers, like truck manufacturers, have been so busy for the last few years building up the active orders that they have not been giving the application of the trailer proposition all the thought that they should.

"There seems to be a feeling among some motor truck owners that trailers are not good for short hauls, that they are hard to handle in hard places, but that is not so at all. The best-known concerns using the greater number of trailers are using them in metropolitan districts; about the docks, ferries, railroad terminals, and they can do this because the modern trailer is built to meet all these requirements. There are concerns also that use trailers exclusively for inter-plant use. One concern I have in mind has a fleet of twenty-four trailers that never run over two miles, being used exclusively in inter-plant work.

Trailers on Long Hauls

"We have an instance of the overland haul from New York to Philadelphia. One concern making a trip this summer, at some periods seven trips a week, carried payloads each way which ran up to eleven tons, truck and trailer. We were told that they made this round trip from New York to Philadelphia for a cost of eighty-five dollars. If you will figure up eighty-five dollars, payload, both ways, you will find that the ton mile cost is brought down under four cents.

"We hear a great deal about the New York to Philadelphia services and, frankly, the trailer manufacturers have had difficulty in inducing motor truck owners to put on trailers for this run. We were told that trucks could not negotiate it. I made a trip to Philadelphia on one of these trains, and the only impression I could get was that it was a deadly, dull, commonplace affair. We hitched on to our trailer and went, and came back. We made the trip in good time, in about eleven hours' running time; we had no difficulty whatever. In other words, the truck, one of standard make, had ample power to draw the trailers up the hill and adequate power to hold the trailers and itself going down the hills.

"Now that so many motor trucks will be released from strictly war work they will have to take the place more than ever in short distance hauling. That is to say, they will have to relieve the railroads more than ever from the l.c.l. loads and the hauls for fifty miles and under, and the problem is going to be how to profitably employ these trucks. There will be no difficulty about employing them, but how to employ them and make money at the same time. Too many trucks are not making enough money for their owners. It will be found that a wider application of the trailer proposition will have to be employed before the motor truck owner can get the full benefit of his truck. And the way it is going to be done, I venture to predict, is that trailers will have to be regarded more in their true light; that is to say, motor trucks will have to be regarded as locomotives, and the trailers for what they really are—freight cars.

Trailers Similar to Freight Cars

"It will be found that in a very short time people will be routing goods in the same manner that they route now on the railroad. That is to say, they will have enough trips made by the trailer, relayed by motor trucks. I think the time is not far away when motor truck operating companies will have a through run say from Boston to Baltimore, Washington or even Richmond, but the motor truck will not make that continuous trip. The truck will go from Boston to Springfield, then another from Springfield to Hartford or Bridgeport, each truck making its run. These trucks will relay through trailer trains. Already we have great motor transportation companies. Philadelphia, especially, has a number who have regular through schedule lines for motor trucks. Concerns like that will be routing their trucks so that they will not only carry, but will pull.

"When trailer manufacturers first began to put their product on the market there was a diffidence among motor truck manufacturers about the trailers. The advent of trailers, it was felt, would cut down the sale of motor trucks, but it has not been found so. The more trailers that have been sold, the more motor trucks were sold. Today there are a number of instances where the selling of trailers has facilitated the sale of motor trucks. The more freight cars needed, the more locomotives are needed to pull them.

"By getting away from unduly long runs of motor trucks, by that I mean the spectacular long runs we hear about from Boston to Akron and Boston to Baltimore, by arranging motor truck schedules along hard-and-fast routes and schedules, by having motor trucks make shorter trips between New York and Bridgeport, for instance, we will get a better type of driver. It is hard to get these drivers to make the spectacular runs. The best driver is the married man, and he does not like to be away from home for such long periods."

Discussion Following Mr. Cline's Talk

Question—May I ask if there has been any local ordinance or laws militating against the use of trailers?

Mr. Cline—No, the local laws are rather in favor of the trailer than otherwise.

Question—Are there any police regulations in regard to this?

Mr. Cline—Yes, police regulations in New York will prevent a man from using more than one trailer in back of a motor truck. The State laws of New Jersey absolutely prohibit this, both semi-trailers and trailers. In New York there is no hard-and-fast ordinance against the use of two trailers. Outside the city limits there are trains used. The Jersey ordinance has worked out in favor of the four-wheel trailer because the four-wheel trailer seems to be the logical solution of carrying very heavy loads, ten tons being carried on eight wheels instead of six wheels. This is easier on the roads. In many states there are no laws against the use of more than one trailer.

Question—How can you figure out the extra weight that can be put behind a truck on a trailer?

Mr. Cline—The average practice is to just double the load. The truck has a drawbar pull of three times its load. Under every day conditions we do not recommend more than a five-ton load in back of a five-ton truck.

Question—Is there any established rule in determining the use of trailers in proportion to the grades?

Mr. Cline—The layman should not figure this for himself. He should get the experience of actual users. There are a number of instances where we have not recommended trailers. Grades have been too severe or roads too bad or certain conditions have precluded the successful use of trailers, and we have stood against it.

Question—How does the trailer operate in heavy snow?

Mr. Cline—There are some days in the winter when you could not use a trailer.

Question—Is there any difficulty in backing the trailers?

Mr. Cline—You cannot back a non-reversible trailer. The only way to apply a four-wheel trailer under 95 per cent. of conditions is to employ a reversible trailer. You can't back a semi-trailer. The solution of the trailer proposition has been the reversible feature.

*Extracts from an address made by Mr. George Cline, Jr., Troy Trailer Company, at the Motor Transportation Conference in New York City.

Boyce Moto-Meter Opens Detroit Branch

The Motometer Co., Inc., of Long Island City, N. Y., manufacturer of the Boyce Moto-Meter, has opened a direct factory branch at 1432 Dime Bank Bldg., Detroit, Mich. The office will be in charge of J. J. Tobias. All correspondence to manufacturers of passenger cars, trucks and tractors will be handled hereafter from the company's Detroit branch.

Sewell Cushion Wheels

DON'T BLAME THE TRUCK — EQUIP WITH SEWELL WHEELS

The Standard and Quality of Sewell Cushion Wheels Will Never Be Lowered for the Sake of Price

The supreme test of Sewell Cushion Wheels means ten years of service with over 25,000 Sewell wheels now in use.

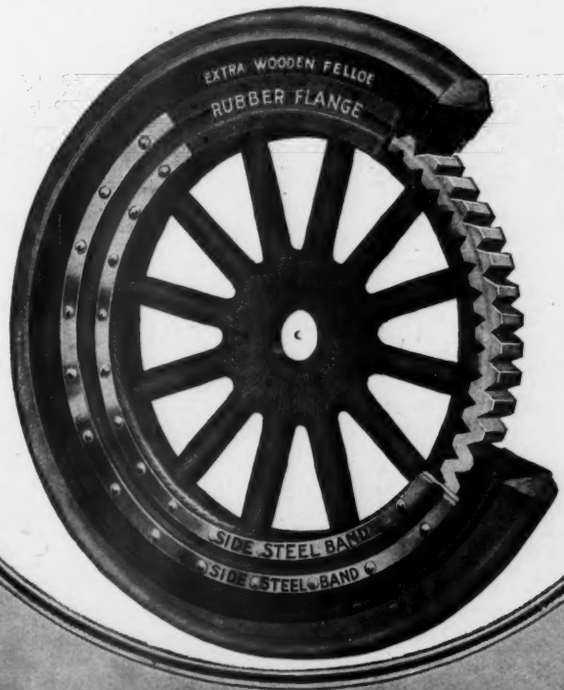
Over 90% pure Para rubber used in the construction of Sewell Cushion Wheels placed in the wheel between the load and the ground contact, gives the truck a rubber roadbed to ride on, which protects the truck and its load against damage from road shocks and vibration.

Your truck, equipped with Sewell Cushion Wheels, will give extra service at less cost.

More mileage—lower upkeep cost—less depreciation.

Sewell wheels are built to last for years.

Write for list of nationally known users



See our exhibit at the Automobile Shows

Branches:
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Columbus, Ohio
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Jacksonville, Fla.
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Los Angeles, Cal.

Sewell Cushion Wheel Company
Main Office and Factory: Detroit, Michigan

Branches:
Louisville, Ky.
Milwaukee, Wis.
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Newark, N. J.
New Orleans, La.
New York, N. Y.
Philadelphia, Pa.
Pittsburgh, Pa.
Rochester, N. Y.
San Francisco, Cal.
Seattle, Wash.
Springfield, Mass.
St. Louis, Mo.

Metal and Rubber Markets

Prices Range Around Institute's Schedule

Now that the steel trade is unhampered by the price restrictions imposed during the period of government control, most members of the industry seem disposed to adopt, for the time being at least, the schedule of prices suggested by the American Iron and Steel Institute.

No immediate boom in production is looked for, and there is little hope of an immediate increase in the volume of business. After government cancellations have had their effect on the labor situation, and industries which have been denied their full allotments of steel under government ruling have gotten into full production, a definite revision in the price scales may be expected.

These prices average $4 a ton less than the fixed maximum prices which were in effect until December 31.

Prices quoted January 6 were:

Steel Products Prices

Per ton, Pittsburg—			
Bessemer billets	$43 50	a	47 50
Open hearth	43 50	a	47 50
Forging billets	60 00	a	.....
Sheet bars	47 00	a	51 00

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—			
Pittsburg	$3 90	a	4 25
Philadelphia	4 13	a	4 48
Chicago	4 115	a	4 465
Galvanized Sheets of Black Sheet Gauge—			
Pittsburg	$6 05	a	6 25
Chicago	6 32	a	6 75
Tin—Mill Black Plate—			
Pittsburg	$4 70	a	5 00

Iron and Steel at Pittsburgh

Bessemer iron	$32 00	a	35 20
Bessemer steel, f.o.b. Pitts...	43 50	a	47 50
Skelp, grooved steel	2 70	a	2 90
Skelp, sheared steel	3 00	a	3 25
Ferromanganese (70%)	220 00	a	225 00
Steel, melting scrap	22 00	a	25 00
Steel bars	2 70	a	2 90

COPPER.—The general situation in copper is not active at present, although producers are of the opinion that there will be heavy buying in the near future. The Copper Export Association, recently organized, has quoted a price of 23c. for export copper, but there seems to be little indication that this level will obtain on domestic sales.

ALUMINUM.—A base price for aluminum of 33c. a pound f.o.b. producing plant for 50 tons and over for ingots of 98 to 99 per cent. has been established by the War Industries Board. The price became effective June 1. It has been stated that the maximum basic prices for aluminum will remain in force until March 1, 1919.

TUNGSTEN.—The market remains unchanged. Quotations remain unchanged, being $20 to $21 for high grade Wolframite and $24 to $25 for Scheelite.

OTHER METAL PRODUCTS.—Since control of copper prices has been called off and an open market is now a reality, the future of the market for brass products is uncertain. As soon as the copper market becomes settled, however, it is probable that quotations other than nominal ones may be made on the following brass and bronze items:

Sheet aluminum, 18 ga. & h'v'r.	42 00a	....	
Copper sheets, hot rolled	36 00a37 50		
Copper sheets, cold rolled	37 60a38 50		
Copper bottoms	44 00a45 50		
Seamless tubing, bronze	45 00a46 00		
Full lead sheets	10 00a	....	
Cut lead sheets	10 25a	....	
Copper rods	36 00a37 00		
Copper wire	29 25a	....	
High brass wire	28 75a29 50		
High brass sheets	28 75a29 50		
High brass rods	26 75a28 75		
Low brass sheets	32 50a34 50		
Low brass wire	32 50a34 50		
Low brass rods	33 25a35 25		
Brazed tubing, brass	37 00a39 00		
Brazed tubing, bronze	42 50a44 50		
Seamless tubing, brass	37 50a39 50		
Seamless tubing, copper	41 00a43 00		

Prices of Old Metals

The following prices are current for old metals:

Aluminum—	Buying.	Selling.
Cast scrap	18 a18¼	19 a19¼
Sheet scrap	18¼a18.75	19 a19½
Clippings	21 a21½	23 a23½
Copper—		
Heavy machinery comp.	16 a16½	17 a17½
Heavy and wire	15 a15¼	16 a16½
Light and bottoms	13¼a13½	14 a14½
Heavy, cut and crucible.	16½a17	18 a18½
Brass, heavy	8.75a 9	9½a10
Brass, light	7.75a 8	8¼a 8½
No. 1 clean brass turn'gs	8½a 9	9¼a 9½
No. 1 comp. turnings	13 a13½	14 a14½
Lead, heavy	4¼a 4½	4.75a 5
Zinc scrap	4 a 4¼	4.50a 5
Block tin, scrap	50 a52	56 a57

Little Business in Rubber

Buyers are manifesting little interest in crude rubber, and few orders are being placed at present.

Following are prices quoted Jan. 4:

Para—Up-river, fine, per lb.	61	a	..
Up-river, coarse	36	a	..
Island, fine	53	a	..
Island, coarse	24	a	..
Caucho, ball, upper	35	a	..
Caucho, ball, lower	..	a	..
Cameta	*25	a	..
Ceylon—First latex, pale crepe.	58	a	..
Brown, crepe, thin, clean..	50	a	..
Smoked, ribbed, sheets	56	a	..
Centrals—Corinto	37	a	39
Esmeralda	37	a	39
Guayule, wet	35	a	..
Guayule, washed and dried.	48	a	..
Balata, sheets	90	a	..
Balata, block, Ciudad	..	a	75
Balata, block, Panama	59	a	60
Mexican—Scrap	39	a	..
Slab	32	a	..
African—Massai, red	55	a	..
Mosambique—Spindles	..	a	..

SCRAP RUBBER.—Reclaimers still withhold orders, but dealers look for a substantial revival of business within the next few weeks and are not disposed to cut prices in the interim.

Tires—Automobile	5	a	5⅛
Bicycles, pneumatic	4¾a		5

* Nominal.

Improved highways—the nation's need

Procedure for Export Licenses Simplified

WASHINGTON, Dec. 26.—The War Trade Board has announced that holders of orders for export to the United Kingdom, France, Italy or Belgium (not including their colonies, possessions or protectorates), either directly or by way of any other country or colony or destined to any other country or colony by way of these four countries (excepting to Switzerland by way of Italy) will be permitted to purchase or commence to manufacture the articles specified in the application for fulfillment of a specific order prior to issuance of an export license. Applications for licenses to export to above countries and in the manner mentioned will no longer be referred by the War Trade Board to the War Industries Board, but will continue to be referred to the missions of the respective European Allied Governments.

Applications for licenses to export any commodities to the countries named and in the manner mentioned must include Application Form X, to which should be attached such supplemental information sheets as may be required by rules and regulations of the War Trade Board in connection with shipments of certain commodities to certain countries, and a new supplemental information sheet (Form X-122) in place of Form X-115. In Form X-122 the applicant must show that permission to import or purchase (if such permission is required) has been granted by the country to or through which shipment is to be made.

Tractor Schools in Illinois

The International Harvester Corp., Chicago, Ill., has opened a series of tractor schools in Illinois, the first being held at Pekin, beginning Dec. 26. Dealers, farmers and others interested are being urged to make a list of questions concerning the tractor and drop them in the question box. Owners of tractors who cannot attend the schools are urged to send their tractor operators. Tractor owners are impressed with the importance of properly caring for their tractors and increasing the efficiency of the tractor by thoroughly studying its mechanism.

Bradley University, at Peoria, Ill., has opened a tractor school, utilizing one of the army barracks which had been in service while military training was in progress. Two tractor courses have been arranged, covering a study of gas engines, principles, transmission, mechanism, ignition, carburetion and lubrication. The first is a two-week course and the second occupies eight weeks. The second course, besides a more intensive study of the subjects mentioned, will include valve timing and grinding, the fitting of piston rings, bearings, a study of gears and chains, wheels used in the transmission of power, magneto and battery ignition, wiring, timing of ignition and a study of fuels and combustion. A third course will include machine shop work and farm mechanics.

balanced oversize

A GOOD truck does not just happen. It means two things—material and "know-how." Master Trucks are the result of engineering experience, in balancing need with material—and material with need.

Master of the Load on ANY Road

Many a manufacturer has gone on the belief that an oversize motor makes a good truck. But a truck is more than a motor—it is more than a frame.

Each part must be good. But more than that, each part must be built in relation—proper to the other part.

Every Master part is built to perform its job just as well—just as economically as the working part next to it.

Every part is oversize. But every oversize part is oversize to a certain definite scale—for a certain definite reason. The motor is oversize. Big enough to do its job and more. Yet not too big to be expensive under its minimum load.

The frame is big—deeper and wider than need be. But it doesn't add just dead weight. It's there to stand the ***extra*** loads.

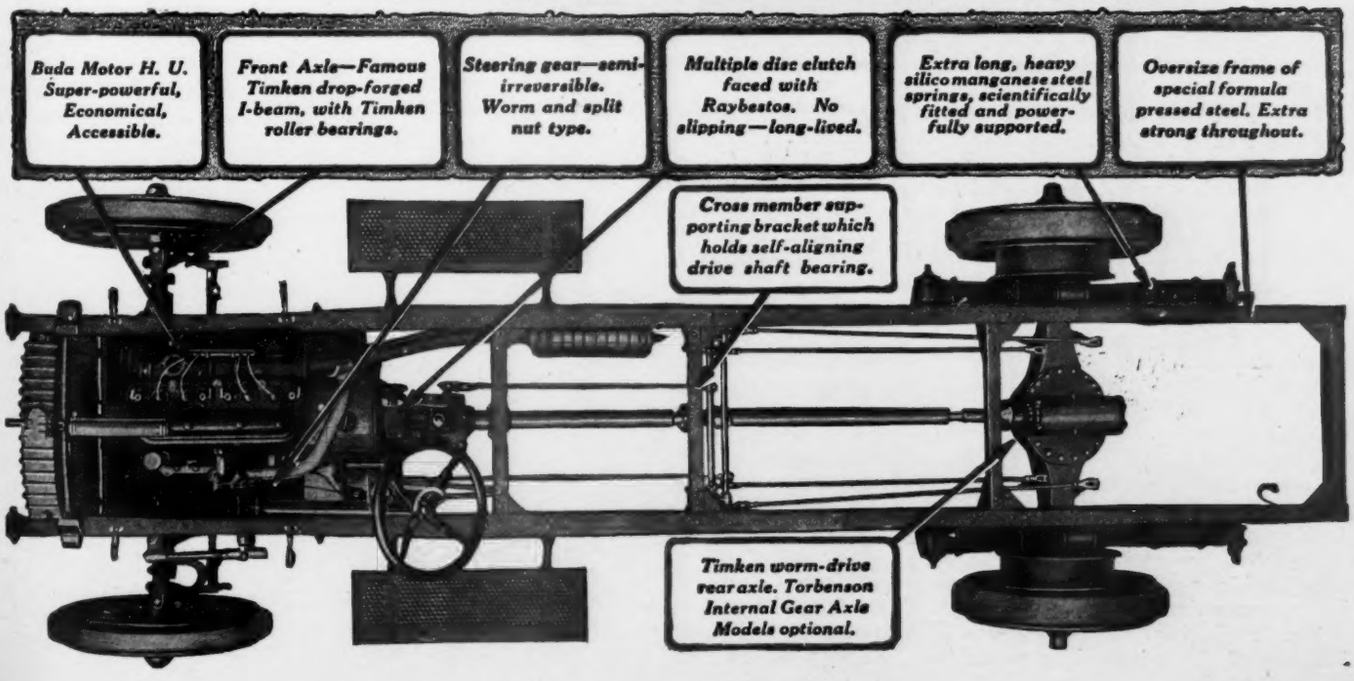
Springs—strong, massive—carry the heaviest loads with cradle-like security and yet save the truck when it runs light.

Sixteen years' experience has evolved Balanced Oversize construction—the Master feature.

1½ to 6-Ton Sizes

MASTER TRUCKS, Inc. 3132-3138 So. Wabash Ave. CHICAGO, ILLINOIS

MASTER TRUCKS


Buda Motor H. U. Super-powerful, Economical, Accessible.
Front Axle—Famous Timken drop-forged I-beam, with Timken roller bearings.
Steering gear—semi-irreversible. Worm and split nut type.
Multiple disc clutch faced with Raybestos. No slipping—long-lived.
Extra long, heavy silico manganese steel springs, scientifically fitted and powerfully supported.
Oversize frame of special formula pressed steel. Extra strong throughout.
Cross member supporting bracket which holds self-aligning drive shaft bearing.
Timken worm-drive rear axle. Torbenson Internal Gear Axle Models optional.

Advocate Nationally Controlled Highways at Highways Congress

Suggestion Made That Uncle Sam Might Take Over Public Highways as Well as Railroads

CHICAGO, Dec. 14.—The foundation for nationally controlled highways for interstate motor truck commerce was laid December 11, 12 and 13 at the Highway Congress under the joint auspices of the American State Highway Officials and the National Highway Industries Associations.

The gist of the proposition boiled down into this one sentence lifted from the resolutions passed just before adjournment, is this:

"Therefore be it resolved that a Federal Highway Commission be created to promote and guide this powerful economic development of both highways and highway traffic and establish a national highway system."

Telegrams received by Manager Brooks of the convention from senators and congressmen in response to copies of the resolution wired to Washington indicate that it is more than likely that a bill will shortly be introduced in Congress providing for at least one hundred million dollars each year for five years to start the work of improving America's two and one-half million miles of highways, only ten per cent. of which have so far received the proper attention even for old fashioned light horse-drawn vehicles.

The details of this bill were outlined in the speech of George M. Graham, chairman of the National Motor Truck Committee and James I. Blakslee, Fourth Assistant Post Master General, sounded the official note in the convention from which other government officials are supposed to get the tone for an appropriation of sufficiently high key to open to the country its one best transportation bet, which was largely overlooked until the railroads fell down on the job of feeding our country and fighting the Hun to a Democratic standstill.

Mr. Graham, in his speech, stripped for action and got right down to cases, with tables of results of the work of trucks what they did and how they did it and how much it cost them to do it. Mr. Graham assumed that his client, Mr. Motor Truck, was on trial for his life and struck right out from the shoulder in his client's defense.

What the motor truck had done to the roads was "old stuff," according to the speaker, but what the roads of the country had done to the motor truck was a detail which the public had overlooked altogether. Extracts from Mr. Graham's remarks follow:

As a basic proposition we beg to submit that **highways should be the servant of transportation, not its master.**

The truck has made its place. It has proved its adaptability to modern transportation problems. Civilization will lose unless means be found for its expanding application. Restrictions, prejudices and petty objections must not be permitted to stand in its way.

If roads are not adequate to heavy truck traffic, **they must be brought up to it.**

The motor truck presents too great possibilities to be side-tracked for temporary considerations.

Motor Truck's Supporters

Those who admit no place for the truck, stand opposed to the spirit of the times. They are putting themselves in opposition to cabinet officers, the railroad administration, the food administration, the War Industries Board, the National Highways Council, the Electric Railway's War Board, the army, the United States Senate, and even the President of the United States, all of whom have approved of and co-operated with the efforts of the Highways Transport Committee to divert all possible traffic to the highways.

Secretary Redfield has definitely stated that legislation restricting the size of motor trucks, is a menace to the development of highways transportation, and constitutes an economic error.

Those legislators, who vote against trucks, feeling that they are serving the interest of the farmer, should be reminded that actually they are working against the pocketbook of the farmer. It is a fact not yet generally known that haulage of farm products by motor truck is cheaper than haulage by team.

Must Protect Present Roads

As manufacturers, we know that we must build trucks to weight, speed and tire size that will do least harm to present roads.

Prominent men of the industry recognizing the difficulties involved, have given close thought to the question of dimensions. Frequent meetings held in Washington have discussed the subject in detail. Compromises and adjustments have been made, and we are now in agreement on a bill which we should like to see enacted into law by all the legislatures of the United States.

We wish to propose a combination of necessary fundamentals, equitable legislation, efficient administration and proper construction.

Trucks Beating the Railroads

It is compulsory to give the subject consideration at once. Even despite poor roads and in the face of discouragement on the part of state authorities, distance motor haulage routes are being established all over the country. The longest, from Chicago to Baltimore, has eclipsed railroad records in matter of time.

Trucks are not only cutting time in transit, but are competing very favorably in cost.

The Syracuse Smelting Works delivers shipments to Philadelphia all three ways with this result:

	Time Required	Costs
Rail	171 hours	$0.305 per cwt.
Boat ...	44 "	.325 " "
Truck ..	11½ "	.35 " "

As compared with the rail shipment the truck makes the trip in less than one-fifteenth of the time, at only one-sixth more cost, with other means of transportation.

Compared with the boat, the truck makes the trip in one-fourth the time at a difference in cost of only one-fourteenth.

Lack of Repair, Not Trucks, Responsible for Conditions of Roads

It is conceded that roads were never in worse shape, that many highways, formerly famed for their perfection, are now battered and filled with ruts and holes.

A foremost expert on road building and maintenance makes the statement that roads during the last two years have not suffered any more damage than heretofore.

"The difference is this," he says: "Since the war started we have not been able to make repairs. Labor has been lacking, and there have been embargoes on road building material. Where formerly in the spring we would have quickly filled the holes, and patched the ruts, we have been unable to do so. Therefore, the roads have been permitted to remain smashed up. Once our maintenance system is restored we will be able to do away with a lot of the present trouble. But for the lack of this repair the present agitation against trucks never would have arisen."

The experience of the State of New York also proves that the motor truck was blamed for much that was not its fault. With an expenditure of more than $150,000,000, the Empire State has only 1000 miles, out of 7500 miles, built of durable pavement type.

Last winter it was found that a considerable mileage was damaged by the heavy motor truck traffic, but that none of the pavements of the durable or better type suffered.

Standard Sizes of Trucks

We have fixed on 12 ft. 6 in. as the utmost distance between road and the summit of the body, and 96 in. as the

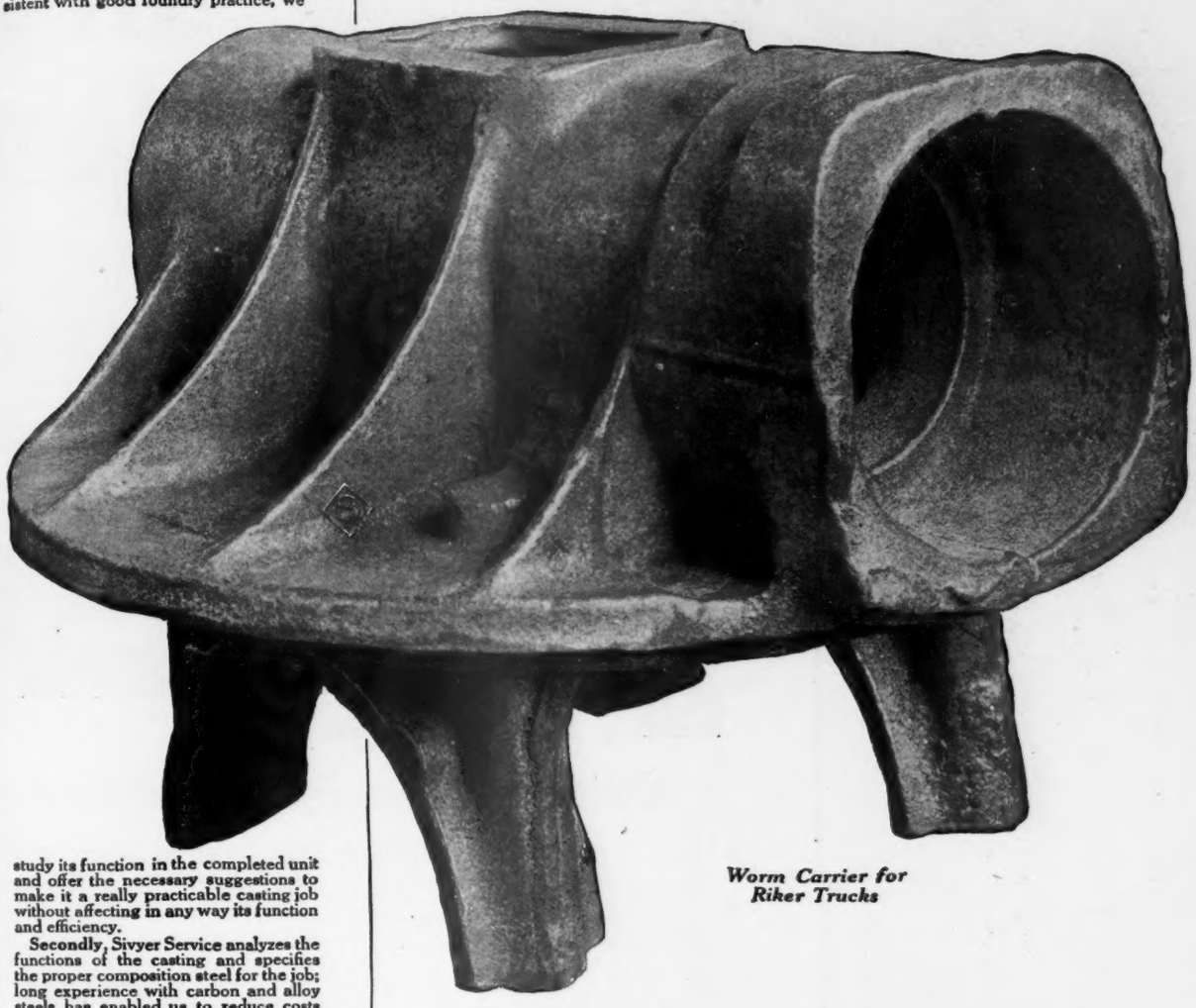
The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

SIVYER S CASTINGS



Worm Carrier for Riker Trucks

SUCCESSFUL solutions of the molding and riser problems involved in making such parts as worm carriers are typical of Sivyer Castings. Proper coring out, and the avoidance of shrink holes and cracks where the thin parts join the thick, mean much to the truck manufacturer in the matter of reduced machining costs. And they mean still more to him, and to the user of his product, by making sure of strength and long life.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

1899—Twentieth

It is fitting that the year 1919, so full of promise as the most eventful in the World's history, should be the Anniversary of just Twenty years of the World's most revolutionary, industrial-history-making Truck Tire.

Since 1899 POTACK

TRUCK MANUFACTURERS WHO HAVE

Chicago Pneumatic Tool Company	Little Giant	Regular Equipment
Dearborn Truck Company	Dearborn	Regular Equipment
H. J. Koehler Motors Corporation	Koehler	Regular Equipment
Stewart Motors Corporation	Stewart	Regular Equipment
Hedden Place Machine Company	Stevenson Unit	Regular Equipment
George C. Bozarth	Bozarth	Regular Equipment
Federal Motor Truck Company	Federal	Regular Equipment
Atterbury Motor Car Company	Atterbury	Regular Equipment
J. C. Wilson Company	Wilson	Regular Equipment
Maccar Truck Company	Maccar	Regular Equipment
Hurlburt Motor Truck Company	Hurlburt	Regular Equipment
Rowe Motors Corporation	Rowe	Regular Equipment
Hahn Motor Truck & Wagon Company	Hahn	Regular Equipment
Corbitt Motor Truck Company	Corbitt	Regular Equipment
Philadelphia Truck & Unit Company	Phila. Truck & Unit	Regular Equipment
Rayford Unit Company	Rayford Unit	Regular Equipment

Your Opportunity

With over a half million trucks in service in 1918
With an immense increase ahead in 1919
With only fifteen makers of standard truck tires to share this truck tire business aggregating a quarter of a billion dollars
With a greater demand than ever for *quality*, for *maximum value*, for *mileage plus*—

POTACK TYRE &

1876 Broadway

1919 Anniversary

In the Twenty years of specialization in building Polack truck tires of such superior quality that their remarkable record of long mileage made Polack construction the "World's Standard," there has been built up in the Polack product a reputation that carries commanding prestige in bringing a greatly increased and profitable business within the reach of Polack dealers.

TRUCK TIRES

World's Standard

CONTRACTED WITH POLACK

Pierce-Arrow Motor Car Company	Pierce-Arrow	Optional Equipment
Autocar Company	Autocar	Optional Equipment
Signal Motor Truck Company	Signal	Optional Equipment
Commercial Truck Company of America	Commercial	Optional Equipment
Day-Elder Motors Company	Day-Elder	Optional Equipment
Lewis-Hall Iron Works	Lewis-Hall	Optional Equipment
Acason Motor Truck Company	Acason	Optional Equipment
Sewell Cushion Wheel Company	Sewell	Optional Equipment
Selden Motor Truck Company	Selden	Optional Equipment
Walker Vehicle Company	Walker	Optional Equipment
Winther Motor Truck Company	Winther	Optional Equipment
Couple Gear Freight Wheel Company	Couple Gear	Optional Equipment
Lange Motor Truck Company	Lange	Optional Equipment
Fruehauf Trailer Company	Fruehauf	Optional Equipment
Columbia Motor Truck & Trailer	Columbia	Optional Equipment
Moss Rebuilt Truck Company	Moss	Optional Equipment

Consider the Opportunity for Profit Polack Truck Tires Offer You

DEALERS: A Truck Tire of such enviable reputation as the Polack product enjoys means big business-building possibilities for you.

Increase your prestige while adding to your profit. Write us for details of attractive dealer proposition.

RUBBER CO.
New York

greatest width of the body. We do not think these figures should be exceeded, and would cheerfully bow to laws so decreeing.

Thus, we readily dispose of height and width, but when we come to weight and speed we have much more to contend with.

Weight and Speed Real Problems

It is not to be denied that our client constantly grows in weight. Moreover, if unrestrained, he steps faster all the time.

We do not deny that the heavily weighted truck, running on solid tires and covering the highways at a stiff rate of speed, deals undoubted damage. But it is not to be forgotten that both this weight and speed serve a highly practical purpose. The cost of carrying the load decreases in proportion to the number of tons carried.

As a general proposition, it may be stated that as the size of the truck increases the cost of operation in relation to carrying capacity decreases. There are four principal reasons for this:

1. The cost of manufacture of a truck does not increase in proportion to the carrying capacity.
2. The so-called fixed charge, or overhead of operation, does not increase in proportion to carrying capacity.
3. The actual operation cost does not increase in proportion to carrying capacity.
4. The weight of the truck itself does not increase in proportion to carrying capacity.

There are not less than 550,000 trucks in use in the United States. It has been estimated that farmers alone will apply to the highways 2,000,000 more trucks within the next ten years. The possibilities in all other lines of activity are so many and so varied that the whole subject of truck legislation must be approached with justice and vision.

Our plan for uniform truck law calls for permission to operate a vehicle whose gross load is 28,000 lb. It also provides that the highway commissioner can reduce this limit to 24,000 lb., where it can be shown that roads will not stand more than this weight. He also has the option of increasing above 28,000 lb., where highly improved roads make this possible.

The table attached to this presentation provides for license fees, three kinds of speed, according to section traversed, maximum weight and the load per inch width of tire.

The load per inch width of tire was, after due consideration, fixed at 800 lb. throughout, whether solid or pneumatic tires be used.

For vehicles of less than 6000 lb. gross weight, including vehicle and load, in other words passenger automobiles or very light commercial vehicles, a maximum speed of 30 miles per hour is permitted in the open country. This may be exceeded for a quarter of a mile in order to permit one vehicle to pass another. Twenty miles an hour is permitted through suburban sections, villages and towns, and 15 miles maximum in thickly built up parts of cities and towns.

Pneumatic tired vehicles are arranged in a classification that goes all the way from 6000 to 28,000 lb. gross weight.

The speed for this entire classification of pneumatic tired vehicles has been made uniform at 25 miles in the open country, 20 miles in suburban sections and 15 miles in congested sections.

Regulating Speed on Solid-Tire Trucks

The next classification brings us to the trucks using solid tires. The lowest gross weight provided for is 4000 lb., the highest is 28,000 lb. Through thickly populated sections none of these vehicles is permitted to go faster than 12 miles per hour. In suburban sections they are all limited to a speed of 15 miles per hour, excepting the 8000-lb. vehicle, which may go up to 18 and the 4000-lb. vehicle, which may run up to 20.

In the open country the regulation is as follows:

4,000-lb. vehicle	25 miles
8,000-lb. vehicle	20 miles
12,000-lb. vehicle	18 miles
16,000-lb. vehicle	16 miles

and the remainder 15 miles.

An examination of the weight of vehicles made by some forty manufacturers shows that within the 4000-lb. class will fall vehicles rated to carry ½-ton and ¾-ton loads; within the 8000-lb. class vehicles rated to carry 1 and 1½-ton loads; within the 12,000-lb. class vehicles rated to carry 2-ton loads; within the 16,000-lb. class vehicles rated to carry 3 and 3½-ton loads; within the 20-000-lb. class vehicles rated to carry 4 and 4½-ton loads; within the 24,000-lb. class vehicles rated to carry 5-ton loads, and within the 28,000-lb. class vehicles rated to carry 6- and 7-ton loads.

Class "D" comprises motor vehicles for the purpose of transporting passengers for hire upon any of the public highways. This has been divided into three main classes.

First, for vehicles of less than 6000 lb., which are permitted 30, 20 and 15 miles per hour, according to sections.

The 7000-lb. vehicle is permitted 30, 20 and 12 miles, according to sections.

The third class calls for 8000-lb. vehicles, and is permitted 25, 20 and 12 miles per hour.

"E" class, motorcycles, calls for no particular comment.

In the "F" class are comprised all solid-rubber or pneumatic-tired vehicles trailed or propelled by motor vehicles. The speed permitted to the propelling motor vehicle naturally regulates the speed of the trailer. The pounds per inch of tire width remain unchanged at 800. The weights run from 4000 to 28,000 lb. as with solid tired trucks.

For trailers that carry pneumatic tires the rate is reduced to three-quarters. It is doubled for iron tire trailers or semi-trailers.

Overloading Made a Misdemeanor

If it be said that the maximum weight should be put to as low a point as possible in order to deal with probable overloading, attention should be directed to the penalty described in the bill, a penalty made the more easy of infliction, since the bill provides for a plate placed on the truck, said plate to show gross weight of vehicle and load. And truck carrying more than its weight becomes liable to the law.

To Finance Road Building

There are three principal methods of finance by which roads that will afford the truck its full chance to serve the public may be obtained:

The first is direct taxation by the state.

The second is by enlarged Federal aid, based on the probability that the war's end will see the United States Government owning a large number of motor trucks, which will be applied to peace uses in the various departments. There is already keen governmental interest in respect to the highways situation, and there are better chances of assistance here than ever before.

Finally, there never was so great a warrant for bond issues as now. The present generation has done its duty by posterity. It has borne not only the burden of death and suffering from the war, but has also assumed more than its share of the financial obligation. Therefore, it is only equity that generations to come should pay their share for inaugurating adequate road systems now. When we obtain roads suited to truck traffic, license fees should always be maintained at such figures as will permit the maintenance of the highways without further burden to the public.

Message From Father of Motor Parcel Post

Assistant Postmaster General Blakslee, under whose administration the Government first used motor trucks for its parcel post, in one of the principal speeches of the convention, placed himself on record as being in favor of "A national highway, of permanent type, covering 15,000 miles, costing $30,000 per mile or $450,000,000, which would be defrayed in reasonable time from earnings of service performed thereon." He further in part stated:

In advocating the extended use of motor-driven vehicles over the highways of the Nation, I am endeavoring to provide for the commercial convenience of the public and to offset partially the increased cost of living to the American people.

I contend that the co-ordination of a governmental function, such as the mail service, is necessary in the establishment of such avenues of communication; and the improvement of the highways

Distinctively Best By Any Test

IN spherical accuracy, size dependability, structural strength, surface finish and working durability Hoover Metal Balls are the recognized standard of the world.

Steel—Bronze—Brass—Aluminum Balls—Solid and Hollow In All Sizes for Every Purpose.

HOOVER STEEL BALL COMPANY
Ann Arbor, Michigan, U. S. A.

and the organization of a system of marketing are essential to the ultimate success of any scheme of distribution.

Therefore, I propose to establish motor vehicle truck routes, to improve the highways, and to inaugurate a marketing system.

I believe that there should be three different methods of meeting the cost of construction and improvement of highways.

First: For a Highway Entirely Federal or National in Character: The Federal Government should defray the cost of construction, improvement and maintenance thereof as an interstate highway, available not only for the transportation of merchandise and food products, but, also, useful for military purposes, and this **main line,** or **through connecting National Highway,** should be utilized by the Federal Government in the transportation of the commodities upon which a revenue should be earned sufficient to meet the expenses of transportation, and to provide for the improvement and maintenance of the roadway over which the commodities are conveyed. A National Highway of permanent type would cover 15,000 miles, cost about $30,000 per mile or $450,000,000, which would be defrayed in reasonable time from earnings of service performed thereon.

Second: For a Highway Supported by the Federal Government and the States and Local Subdivisions Thereof: This method, one of co-operation in the improvement of highways, on a basis that is in effect at this time, is one whereby the Federal Government participates with the states and local subdivisions thereof in the cost of construction and maintenance of highways, by paying one-half the cost thereof, and such expenditures should be made with due regard to the value of the highway in its relation as a feeder to the **trunk line,** or **National Highway,** heretofore mentioned.

Third: For a Highway Supported by State, County or Township: This includes the construction and maintenance of the dirt gravel, or sand clay road, the cost of which should be borne solely by the local state, county or township, and would be utilized as supply roads to the **feeder** roads that finally connect with the **National trunk line** roads.

I have prepared a definite program to include the establishment of means of conveyance between any two large markets through producing territory,—not adjacent to rail or water transportation,—in order that the individuals domiciled therein or thereon might trade directly with one another. I have presented a specific proposition for the improvement of the highways. I do not concern myself solely with the favorable location thereof, or the type of materials of which they should be constructed or maintained, but have outlined—what is far more important—a method whereby the cost of construction and maintenance of such highways may possibly be defrayed from savings in the cost of distribution. I have interested myself in the disposition of the products transported in the vehicles over the highways, so that merchant or manufacturer, farmer or dairyman, can easily, quickly, communicate with and do business with one another.

The rural merchant always shivers when he thinks of the mammoth mail order house or the great department store competition possible through enlarged transportation facilities from city to rural territory. In the proposition he may rest assured that he can extend his business in proportion to the extension of means of conveyance. He may trade calico, muslin and overalls for eggs and butter, sausage and food staples, and the consumer in the city will establish commercial and friendly relations with him forthwith to his everlasting profit.

When finally developed, the rural carrier now on his way going nowhere from nowhere and arriving nowhere will become an important link in a system of distribution that will warrant and demonstrate that the money expended for this service is well spent and the compensation of this through necessary employees is earned.

King Trailer Company Undertakes Unique Merchandising Service

An educational campaign, planned to show the dealer the advantages of merchandising the trailer as an essential part of truck equipment, has been started by the King Trailer Co., Ann Arbor, Mich. It consists of a series of bulletins, each of which takes up the application of King transport units to a particular make of truck. The bulletins are eight pages in size, with colored covers, four of the pages being devoted to the trailer and four to the make of truck which is featured.

Bulletins for sixteen of the leading truck companies are already off the press and others are in course of preparation. A large number of requests have been received from dealers that the truck they handle be included in the series.

The King Co. believes that it is necessary—just as it was in the early days of the truck business—to show the user in detail just how trailers may be economically applied to his business, and that it is the duty of the manufacturer to effect this, or at any rate to make it so easy for the dealer to do that the sales effort required will be reduced to a minimum.

A reasonable number of the bulletins will be sent without charge to any dealer interested, either on request to the King Trailer Co. at Ann Arbor, Mich., or by writing to the truck factory whose product he handles. The issuance of these bulletins is part of a comprehensive campaign of education by the King Co. on trailer uses, which includes national mediums, trade papers and direct mail literature.

Electric Service Association Formed

CHICAGO, Jan. 2.—Recently at a meeting at the Chicago Automobile Club, executives of representative electric service stations organized the National Automotive Electric Service Association.

The object of this organization is to improve upon the present unfair conditions of spurious parts manufacturers and to promote and improve service on electrical equipment of automotive vehicles, by co-operation between its members and others interested in the same line of business.

The association will neither endorse nor recommend any individual, firm or company or any scientific or engineering production, but the opinion of the association may be expressed on such subjects as affect the public welfare.

The membership in this association will be by firms rather than by individuals, each firm being entitled to two representatives with one vote for each representative. Any firm whose entire business or a fair proportion of its business is devoted to service on the electrical equipment of automotive vehicles will be eligible to membership.

The officers elected were: President, Arthur Jones, president Arthur Jones Electric Co.; vice-president, A. E. Urban, manager Pellet Magneto Co.; secretary, John W. Ruzicka, proprietor Motor Elec. Equipment Co.; treasurer, R. J. Hardacker, manager North East Elec. Co.

Luverne Offers Truck Parts in Small Quantities

To meet the demand of shops engaged in the manufacture of motor trucks and the conversion of passenger cars into trucks, for small quantities of truck parts which can be obtained as needed, the Luverne Automobile Co., Luverne, Minn., is offering a line of truck and truck unit parts.

This line of truck parts is furnished in several sizes suitable for trucks and truck units from ¾ to 3-ton capacity, and consists of axles, wheels and tires, frames, fittings, springs, motors, transmissions, bodies, cabs, hoists, etc. All parts are complete in themselves, ready to assemble, and are sold either in complete sets or as separate units.

The Luverne parts are also well adapted for export trade, for foreign firms who are in position to assemble the parts and build bodies and equipment locally.

No Reduction in Commerce Truck Prices.—To eliminate the uncertainty of the price question, the Commerce Motor Truck Co., of Detroit, has sent an announcement to its distributors stating that it will guarantee its distributors against any reduction in the price of Commerce trucks should a reduction in list price be made.

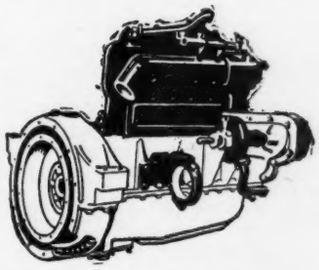
THE BUDA COMPANY
BUDA ENGINE
High-Class
ESTABLISHED 1881

Every Soldier in the Motor Transport Corps Swears by Buda—It Stands the Gaff

WHEN the call came for motor transport abroad the standard H-U engine measured up to government requirements without a single change in its basic design.

Buda contributed approximately four hundred and twenty-five thousand unfailing horse power to the winning of the war.

This is the same identical engine that is regular installation in many of the better known commercial cars and tractors.



Buda Heavy-Duty H-U Engine, 4¼" Bore x 5½" Stroke. Pressure Lubrication.

The Buda Company, Harvey (Chicago Suburb), Ill.

A Complete Line of Truck and Tractor Engines

The Mobile Moving-Picture Outfit

Bringing the motion picture to your back door on a truck is a probability in this country as the result of the success of such mobile moving picture outfits used in England, Scotland, Ireland and Wales. This is made possible in America through the establishment of the Bureau of Commercial Research and the fact that it has met with success in Europe.

Ten of these mobile moving picture outfits, using the chassis of the Acason Motor Truck Co., of Detroit, spread war propaganda on the British Isles, intending to counteract Defeatist and Pacifist sentiment. Officials of the Acason Motor Truck Co. declare the English government is contemplating increasing their fleet of ten such outfits to twenty-five and possibly more.

With the mobile moving picture outfit the screen can be set up anywhere out of doors. The generating equipment, consisting of a 12-hp. gasoline engine, is connected directly with the dynamo. The projector is mounted on the same foundation. It is only a matter of five minutes or less before the crew places the screen in position and the film throws the picture with true clearness to its audience in the out-of-doors.

The body is so constructed that in addition to carrying the complete motion picture outfit ready to display pictures, it also provides for sleeping quarters for its crew. Inside it has places for hammocks and other sleeping facilities. When traveling along the highway it resembles a moving van.

On the British Isles certain territory was laid out for each crew. Pictures showing what the English were doing in the war, the necessity for the war and subjects vital to keep public interest aroused were pictured.

Here in America the scheme has had much consideration. Francis Holley, director of the Bureau of Commercial Economics, would naturally have charge of such a plan. His department is now co-operating with the governments of France, England, Argentina, Chili, Bolivia and the Pan-American Union. It would be an opportunity of carrying right out into the country big thoughts that one would want to get over to the farm and folks, even in metropolitan centers—what America has done in the war; the necessity of economizing food to feed the world, the scramble for international trade and many other big important lessons the American government wants its people to know.

Willys, Not Willys - Overland, Buys New-Process Gear

Rumors to the effect that the New Process Gear Corp., of Syracuse, N. Y., has been taken over by the Willys-Overland Co. are incorrect. The New Process Gear Corp. has been purchased outright by John N. Willys, who has taken over all of the $3,000,000 capital stock of the concern. There is no change contemplated in the nature of the product the company will manufacture, although it is expected that material expansions in the old field will result. It is the intention of the company to solicit gear business of all kinds, and particularly insofar as the manufacture of gears relates to differentials and transmissions for the automobile trade.

Thomas W. Meachem and other members of the Meachem family connected with the corporation have retired, having sold their interests to Willys. On the latter's part, this step represents final complete acquisition of a plant in which he previously has been partially interested. No change of active management has been intimated, immediate control of the enterprise being in the hands of J. Allen Smith.

With This Mobile Outfit Propaganda Can be Spread in the Most Remote Districts
The body is so constructed that besides carrying the complete motion picture outfit ready to display pictures, it also provides for sleeping quarters for its crew

Shipments to the United Kingdom

WASHINGTON, Dec. 21.—The War Trade Board has been requested by the British War Mission to make the following announcement:

"The Controller of Import Restrictions, Board of Trade, London, has, with effect from December 19, 1918, dispensed with the Permit-to-Purchase system for purchases in the United States. Permits to purchase are, therefore, no longer required, but articles which are prohibited imports must be covered by import licenses, which can only be obtained by the consignee.

"Owing to changes being constantly made in the British Import Restricted List, the British War Mission is unable to keep exporters advised at all times and with any degree of accuracy of the articles requiring import licenses. Exporters are strongly advised, before they make shipment, to obtain from their consignees in the United Kingdom definite assurance that they have obtained an import license or have been informed by the controller of import restrictions or other interested department, such as agricultural machinery department, paper controller, etc., that an import license is not necessary. All goods shipped in contravention of import restrictions or for greater weights and values than are authorized by import licenses are subject to confiscation on arrival.

"Exporters will be in order in making shipment of goods covered by British Permits to Purchase already issued, provided the weights and values authorized are not exceeded, as import licenses for such shipments will be issued on arrival of the goods in the United Kingdom."

In view of the foregoing, the War Trade Board announces that individual applications for export licenses will no longer be referred to the British War Mission.

Firestone Stockholders Meet

AKRON, Dec. 20.—The annual stockholders' meeting of the Firestone Tire & Rubber Co. was held in the auditorium of the Firestone club house on Monday afternoon. A second meeting was held on the second floor, the program being the same for both meetings.

Several thousand Firestone employees, who compose a very large proportion of the stock-holding constituency, were present. The reports of Secretary S. G. Carkhuff and Treasurer J. S. Robertson were read, showing the exceedingly prosperous condition of the company.

During the year Plant No. 2 was completed and devoted exclusively to work for the Government, which work is now largely finished. The equipment originally ordered for this building is on hand and paid for and is now being installed. The same holds good for Firestone's new addition to its power house, which is almost finished.

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"NORMA"

PRECISION BALL BEARINGS

(PATENTED)

In any machine, maximum serviceability can be had only when each link in the chain from power to performance has a capacity for its functions ample for every emergency. A consistent factor of safety must obtain throughout. And it is not unusual to find that a very inconspicuous part bears a tremendous burden of responsibility—may, by its failure, cripple the whole mechanism.

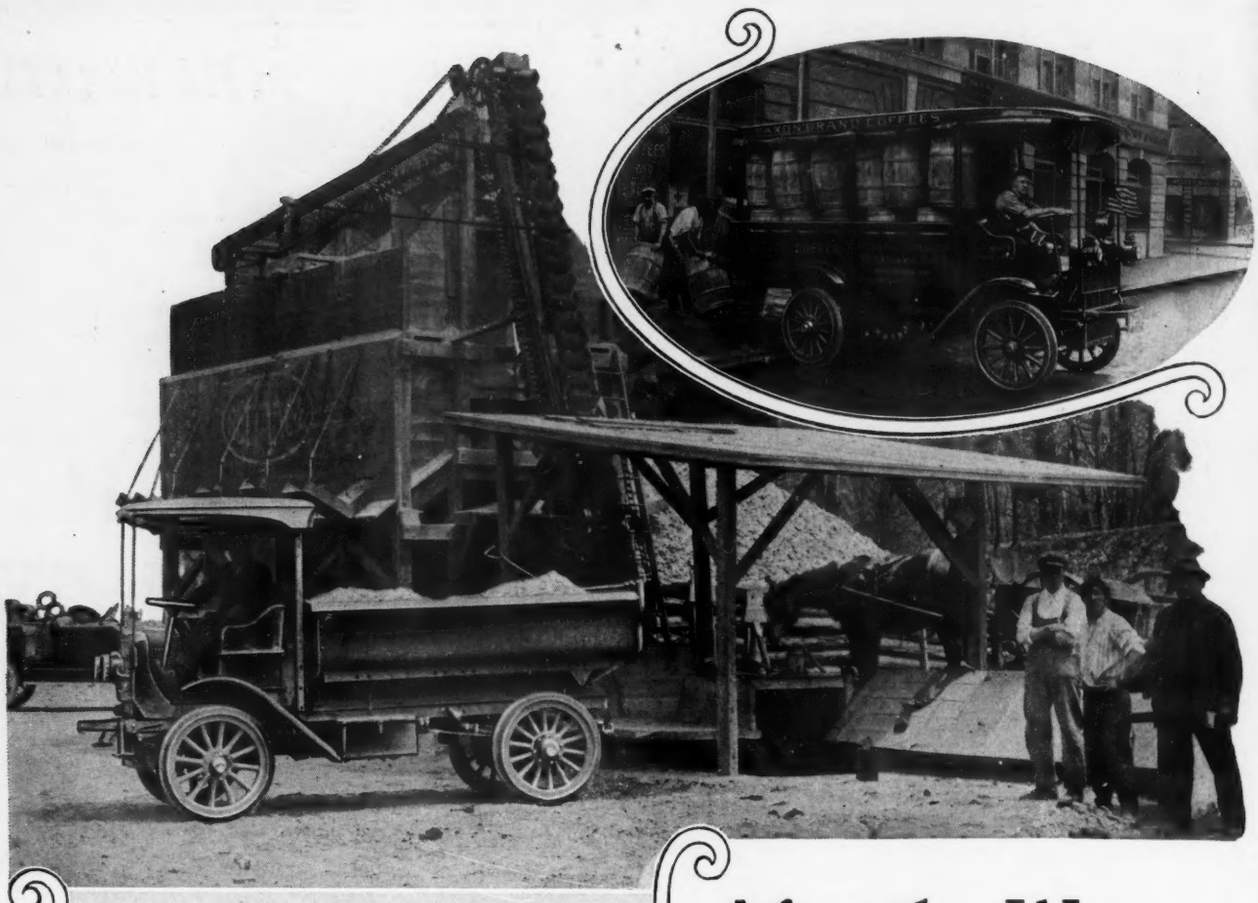
The bearings in ignition apparatus and lighting generator of a car, truck, tractor, power boat or airplane are vital to the machine's performance—can make or mar its record. Therefore, builders of dependable electrical apparatus, knowing "NORMA" dependability in speed service, have standardized on "NORMA" Ball Bearings.

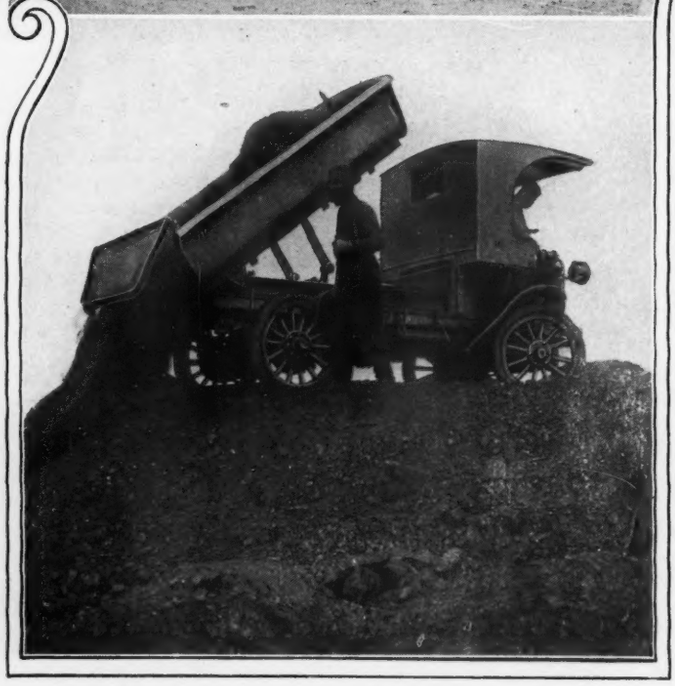
Be *Sure*—See That Your Electrical Apparatus is "NORMA" Equipped

THE NORMA COMPANY OF AMERICA

1790 BROADWAY NEW YORK

Ball, Roller, Thrust and Combination Bearings





After-the-War Readjustment Facts

DURING the first nine weeks after the Armistice was signed, the Autocar Company, of Ardmore, Pa., received repeat orders for Autocar motor trucks from three hundred and fifty-six different concerns.

These business houses realize that increasing their transportation facilities is one of the main essentials in getting back to a peace basis.

The confidence in the Autocar that leads to these repeat orders is based on the efficiency that Autocars have proved in actual use—and on the after-sale service rendered by local Autocar branches and dealers.

Write Dept. K for Catalog

THE AUTOCAR COMPANY
ARDMORE, PA. *Established 1897*

Chassis, $2050
1½-2 Ton Capacity

Autocar